DOCUMENT RESUME

ED 130 116 CE 008 638

TITLE	Occupational Orientation: Applied Biological and Agricultural Occupations. Experimental Curriculum Materials.
INSTITUTION	Illinois State Office of Education, Springfield.
PUB DATE	[75]
NOTE	178p.; For related documents see CE 008 635-639
EDRS PRICE	MF-$0.83 HC-$10.03 Plus Postage.
DESCRIPTORS	Activity Learning; Agribusiness; Agricultural Machinery Occupations; *Agricultural Occupations; Agricultural Production; Attitude Tests; *Biological Sciences; *Career Exploration; *Conservation (Environment); Criterion Referenced Tests; Curriculum; Environment; Farm Mechanics (Occupation); Forestry Occupations; Horticulture; Instructional Materials; *Learning Activities; Lesson Plans; Natural Resources; *Occupational Clusters; Occupational Guidance; Performance Based Education; Secondary Education
IDENTIFIERS	Illinois

ABSTRACT

These experimental curriculum materials, from one of five clusters developed for the occupational orientation program in Illinois, include a series of learning activity packages (LAPs) designed to acquaint the student with the wide range of occupational choices available in the applied biological and agricultural occupations. The 30 LAPs, each with a different occupation focus are grouped under six categories: (1) Applied Biological and Agricultural Occupations, (2) Agricultural Mechanics, (3) Agricultural Products, Supplies, Sales, and Services, (4) Natural Resources, Forestry, and Environmental Control, (5) Ornamental Horticulture, and (6) Production Agriculture. Each LAP identifies the category, the focus, the activity, and the objective. It lists the equipment, supplies, and forms needed, states the rationale, and describes the suggested procedure and alternate activities. The activities are designed to give students the opportunity to research, observe, and gain hands-on-experience in representative jobs within the career field. This document contains the Student Awareness/Attitude Inventory, and guidelines for developing pre-post assessment tests. Eleven student forms, 21 references, and 26 addresses for obtaining resources are appended. (HD)

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ED130116

OCCUPATIONAL ORIENTATION

APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS

Illinois Office of Education
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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NE 008 638

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INTRODUCTION

The Applied Biological and Agricultural Occupations cluster is one of five clusters developed for the occupational orientation program in Illinois. The other four clusters are: Personal and Public Service Occupations; Health Occupations; Business, Marketing, and Management Occupations; and Industrial Oriented Occupations.

Each cluster consists of a series of learning activity packages (LAPs), teacher references, and career resources. The purpose of the LAPs is to acquaint students with the wide range of occupational choices available within each career cluster field. By participating in the activities, students are given the opportunity to research, observe, and gain hands-on experience in representative jobs within the career field.

Accompanying these cluster materials is the Teacher's Guide to Occupational Orientation. The guide provides an overview of the occupational orientation program in Illinois, suggestions to teachers for implementing a variety of instructional strategies contained in the cluster (field trips, simulations, use of resource persons, and in-class projects), and the Career Exploration Package on interviewing techniques which lays a basic foundation for the learning activity packages within each cluster. It is strongly recommended that teachers use the Teacher's Guide in conjunction with the teaching of the cluster.

Also included in the Teacher's Guide, and duplicated here, are 1) guidelines for developing pre-post assessment tests and 2) a Student Awareness/Attitude Inventory that can be administered at the beginning of the cluster course.

Guidelines for Developing Pre-Post Assessment Tests

Measuring student knowledge before, during, and after teaching the cluster materials is an important ingredient to the success of the occupational orientation program. Testing allows both the teacher and the student to know what material is going to be covered in one or more LAPs and also to know what material has and has not been learned upon the completion of the activity.

The learning activity packages contained in the cluster materials lend themselves particularly well to this kind of student evaluation. Since an integral part of each LAP is the LAP objective, tests can be developed to measure on a pre-post basis how well each student has mastered the skill or knowledge taught during the activity.

Tests that evaluate students in this way are called criterion-referenced tests. These tests are simply a measure of what the student knows or can do, given the conditions, performance, and standards stated in the objective. Examples of situations in which pretests and posttests could be used effectively in the teaching of this cluster are:

- before and after a field trip to a farm machinery dealer

- before and after class presentations on meat processing occupations
- before and after the teaching of a series of LAPs on production agriculture
- before and after the teaching of the entire cluster on Applied Biological and Agricultural Occupations

In each of these situations a pretest serves several useful purposes. Students are given an overview of the kinds of things that will be covered during the lesson or course and what they will be expected to know upon its conclusion. Teachers can discover, by examining the results of the pretests, areas in which students are strongest, as well as areas in which intensive instruction will be required.

By comparing the pretest results with those of the posttest, each student and the teacher learn which skills and knowledge have been mastered or not mastered for a single LAP, a series of related LAPS, or the entire course. Through the evaluation of pre- and posttest results, remediation activities can be planned, courses can be revised, and successful teaching strategies can be identified.

The procedures listed below are given here as an aid in developing tests in the Applied Biological and Agricultural Occupations cluster. The example given here deals with a single learning activity package; however, these same steps can be used for pre- and posttesting a series of related LAPs or for pre- and posttesting the entire cluster.

The teacher should also consult the series of Pre-Service Occupational Program (POP) Kits available from the Division of Adult, Vocational and Technical Education office in Springfield. Of particular importance are: Kit 3.1, Student Performance Objectives; Kit 3.3, Writing Sets of Objectives; Kit 5.1, Test Item Writing; and Kit 5.2, Student Performance Evaluation.

Develop one or more performance objectives based on a LAP objective. Every learning activity package in the cluster is preceded by a general learning objective, i.e. a statement of what the student should be able to do upon completion of the activity. The specific activity described in LAP 4, for example, is a field trip to a farm machinery dealer. The objective for LAP 4 is: "At the conclusion of this lesson, the student will be able to identify and record on a student worksheet some of the responsibilities, educational requirements, and approximate salary ranges for a farm machinery dealer."

This general learning objective can be broken down into several more specific performance objectives: 1) "Given a list of five job responsibilities, the student will be able to select from the list the three responsibilities which pertain to the job of a farm machinery dealer, 2) "Given a list of four educational requirements for jobs, the student will be able to select the educational requirement of a farm machinery dealer," 3) "Given a scale of salary ranges, the student will be able to identify the salary scale of the farm machinery dealer."

Notice that for each of the performance objectives, three components were presented: the conditions ("given a list" or "given a scale"), the performance required of the student ("will be able to select from the list the three responsibilities...") and the standard of preformance required (selecting three responsibilities from a list of five). A well-written performance objective always contains these three components stated in concrete, measurable terms.

Rank the performance objectives by importance. Before writing test items, the relative importance of each of the performance objectives should be decided. For a single learning activity package this decision is usually not too difficult to make. In LAP 4, for example, the performance objective dealing with the job responsibilities of the farm machinery dealer is probably the most important, while the other two objectives are of lesser importance. When you are trying to decide the importance of 20 or 30 performance objectives for a series of 10 learning activity packages, this task may be more difficult. However, the time will be well spent since such pre-instruction decisions on a series of LAPs will assist planning for teaching skills and knowledge most important for students to learn.

Decide how much testing time is available or desirable. Since the amount of testing time determines, in large part, the length of the test, you must decide how much time is available or desirable for testing. Testing time could range from a short 5 to 10-minute period for a pretest before a conservation worker comes to speak to the class to a 30- or 40-minute period for a posttest following instruction on the seven LAPs in Ornamental Horticulture. When you have decided the amount of testing time, you should be able to estimate the number of test items to be written.

Develop one or more test items to measure each performance objective. The first consideration is the number of test items to be designed for each objective. Having decided, for example, that the job responsibilities of the farm machinery dealer are the most important aspect of LAP 4, you will probably want to write a large proportion of the test items to measure that performance objective. A second consideration is the type or format of test item to select. For ease of administration and evaluation of results, it is advised that group-administerable, multiple-choice items be used. Written responses to questions or individually administered items are much more difficult to score and evaluate and require an excessive amount of testing time.

Administering the Student Awareness/Attitude Inventory

The student awareness/attitude inventory on the following pages should be given before instruction begins on any of the learning activity packages in the cluster. Two purposes are served by the inventory: 1) it can be used by the teacher to generate a general class discussion about careers and to establish a positive climate for occupational exploration in the Applied Biological and Agricultural field, and 2) it can serve as the basis for a personal career discussion between the student and his or her guidance counselor. Items 1-60 are specifically

designed for general class discussion purposes and Items 61-102 are designed for career guidance discussions.

Through the combination of this inventory, other guidance activities, the cluster's learning activity packages, and the Career Exploration Package (see Teacher's Guide), it is hoped that the student will take responsibility for establishing his or her own career goals. The discussions which result from the administration of the inventory provide a useful starting point for identifying both awareness and attitudes in the occupational orientation program.

STUDENT AWARENESS/ATTITUDE INVENTORY

Name: _____

Directions: Listed below are a number of statements about work and choosing an occupation. Read each statement and decide whether you agree or disagree with it. Your answer should be as close as possible to what your true opinion is right now. There are no right or wrong answers. If you STRONGLY AGREE with the statement, circle SA; if you AGREE with the statement, circle A; if you are UNDECIDED, circle U; if you DISAGREE with the statement, circle D; and if you STRONGLY DISAGREE circle SD.

1.	You have to know what you do well, and what you do not do well before you can choose an occupation.	SA A U D SD
2.	Ask others about their occupations, but make your own choice.	SA A U D SD
3.	It's unwise to choose an occupation until you have given it a lot of thought.	SA A U D SD
4.	Once you make an occupational choice, you can't make another one.	SA A U D SD
5.	In making an occupational choice, you need to know what kind of person you are.	SA A U D SD
6.	A person can do anything he or she wants as long as he or she tries hard.	SA A U D SD
7.	Your occupation is important because it determines how much you can earn.	SA A U D SD
8.	In choosing an occupation, it is more important to know what you do well than to know what you like to do.	SA A U D SD
9.	Plans which are indefinite now will become much clearer in the future.	SA A U D SD
10.	Your parents probably know better than anybody which occupation you should enter.	SA A U D SD
11.	Work is worthwhile mainly because it lets you buy the things you want.	SA A U D SD
12.	Work is drudgery.	SA A U D SD
13.	A person should not even try to decide upon an occupation because the future is so uncertain.	SA A U D SD
14.	It's probably just as easy to be successful in one occupation as it is in another.	SA A U D SD
15.	By the time you are 15 years old, you should have your mind pretty well made up about the occupation you intend to enter.	SA A U D SD

16.	There are so many things to consider in choosing an occupation, it is hard to make a decision.	SA A U D SD
17.	Sometimes you can't get into the occupation you want to enter.	SA A U D SD
18.	You can't go very far wrong by following your parent's advise about which occupation to enter.	SA A U D SD
19.	Working in an occupation is a lot like going to school.	SA A U D SD
20.	The best thing to do is to try out several occupations and then choose the one you like best.	SA A U D SD
21.	There is only one occupation for each individual.	SA A U D SD
22.	The most important consideration in choosing an occupation is whether or not you like it.	SA A U D SD
23.	Your interest in an occupation is not as important as whether you can do the work.	SA A U D SD
24.	You get into an occupation mostly by chance.	SA A U D SD
25.	It's who you know, not what you know, that's important in an occupation.	SA A U D SD
26.	You should choose an occupation which gives you a chance to help others.	SA A U D SD
27.	You should choose an occupation, then plan how to enter it.	SA A U D SD
28.	You should choose an occupation in which you can someday become famous.	SA A U D SD
29.	If you have some doubts about what you want to do, ask your parents or friends for advice and suggestions.	SA A U D SD
30.	Choose an occupation which allows you to do what you believe in.	SA A U D SD
31.	The most important part of work is the pleasure which comes from doing it.	SA A U D SD
32.	It doesn't matter which occupation you choose as long as it pays well.	SA A U D SD
33.	As far as choosing an occupation is concerned, something will come along sooner or later.	SA A U D SD
34.	I don't worry about choosing an occupation because I don't have anything to say about it anyway.	SA A U D SD
35.	The best occupation is one which is interesting.	SA A U D SD
36.	I really can't find any occupation that has much appeal to me.	SA A U D SD
37.	I have little or no idea of what working will be like.	SA A U D SD
38.	When I am trying to study, I often find myself daydreaming about what it will be like when I start working.	SA A U D SD

39.	If I go into the military, I think I'll wait to choose an occupation until I'm out.	SA A U D SD
40.	When it comes to choosing an occupation, I'll make up my own mind.	SA A U D SD
41.	I want to really accomplish something in my work—to make a great discovery or earn lots of money or help a great number of people.	SA A U D SD
42.	As long as I can remember, I've known what job I wanted to do.	SA A U D SD
43.	I can't understand how some people can be so set about what job they want to do.	SA A U D SD
44.	My occupation will have to be one which has short hours and nice working conditions.	SA A U D SD
45.	The occupation I choose has to give me plenty of freedom to do what I want.	SA A U D SD
46.	I want an occupation which pays a lot of money.	SA A U D SD
47.	I often wonder how successful I'll be in my occupation.	SA A U D SD
48.	I know which occupation I want to enter, but I have difficulty in preparing myself for it.	SA A U D SD
49.	I know very little about the requirements of occupations.	SA A U D SD
50.	I want to continue my schooling, but I don't know what courses to take or which occupations to choose.	SA A U D SD
51.	I spent a lot of time wishing I could do work that I know I cannot ever possibly do.	SA A U D SD
52.	I'm not going to worry about choosing an occupation until I'm out of school.	SA A U D SD
53.	If I can just help others in my work, I'll be happy.	SA A U D SD
54.	I guess everybody has to go to work sooner or later, but I don't look forward to it.	SA A U D SD
55.	I often daydream about what I want to be, but I really don't have an occupational choice.	SA A U D SD
56.	The greatest appeal of an occupation to me is the opportunity it provides for getting ahead.	SA A U D SD
57.	Everyone seems to tell me something different—until now I don't know which occupation to choose.	SA A U D SD
58.	I have a pretty good idea of the occupation I want to enter, but I don't know how to go about it.	SA A U D SD
59.	I plan to follow the occupation my parents suggest.	SA A U D SD
60.	I seldom think about the occupation I want to enter.	SA A U D SD

61.	A college degree is necessary for the kind of work I want to do.	SA A U D SD
62.	My father wants me to go to college.	SA A U D SD
63.	My mother wants me to go to college.	SA A U D SD
64.	I would be able to earn more money as a college graduate.	SA A U D SD
65.	I want to learn more about the careers I might enter.	SA A U D SD
66.	Marriage will help advance my career.	SA A U D SD
67.	I enjoy learning.	SA A U D SD
68.	My teachers think that I should go to college.	SA A U D SD
69.	I feel athletics should be an important part of my education.	SA A U D SD
70.	I'm influenced by many of my friends who are going to college.	SA A U D SD
71.	Social activities are very important to my career goals.	SA A U D SD
72.	I want to make good personal contacts for business or an occupation.	SA A U D SD
73.	A college education would not help me to do the things I am most interested in.	SA A U D SD
74.	I want to get a job and start earning a living as soon as possible.	SA A U D SD
75.	I need to start earning a living in order to support myself immediately.	SA A U D SD
76.	Continuing my formal education after high school would cost more than my parents could afford.	SA A U D SD
77.	Continuing my formal education after high school would cost more than my parents are willing to pay.	SA A U D SD
78.	My high school grades are too low to continue my education after high school.	SA A U D SD
79.	I don't like to study.	SA A U D SD
80.	I don't think I have the ability to continue my education after high school.	SA A U D SD
81.	It would cost more than it is worth to me to continue my education after high school.	SA A U D SD
82.	Earning a good income is important to me.	SA A U D SD
83.	Having job security and permanence is important to me.	SA A U D SD
84.	The work that I do should be important.	SA A U D SD
85.	I want the freedom to make my own decisions in my job.	SA A U D SD

86. In my job I should have the opportunity for promotion and advancement. SA A U D SD

87. Meeting and working with sociable, friendly people is important to me. SA A U D SD

88. If I could get better pay at another place, I would change jobs. SA A U D SD

89. If the work was not interesting enough, I would change jobs. SA A U D SD

90. If I could do more important work elsewhere, I would change jobs. SA A U D SD

91. If I had a poor supervisor, I would change jobs. SA A U D SD

92. If I didn't like my co-workers, I would change jobs. SA A U D SD

93. If I did not receive expected promotions or salary increases, I would change jobs. SA A U D SD

Directions: Read each question and circle the letter that answers the question for you.

94. Do you think you will quit high school before you graduate?

A. I will definitely leave.
B. I am likely to leave.
C. I don't know.
D. I am likely to stay.
E. I will definitely stay.

95. After you graduate from high school, what do you plan to do?

A. I will get a job.
B. I will go to vocational, technical, or business school.
C. I will go to junior college.
D. I will go to college.
E. I don't know.

96. If you go to college when do you plan to start?

A. right after high school
B. after completing military service
C. after I have worked for a few years
D. my plans are not definite
E. I definitely do not plan to attend college

97. How much education do your parents or guardians want you to have?

A. They don't care whether I stay in school.
B. high school only
C. vocational school, business school, or junior college
D. college degree
E. I don't know.

98. How much education are most of your friends planning to obtain?

A. They are planning to quit high school.
B. They are planning to complete only high school.
C. They are planning to obtain vocational school, business school, or junior college training.
D. They are planning to obtain four-year college training.
E. I don't know.

99. How many different occupations have you seriously considered entering?

A. none
B. one
C. two
D. three
E. four or more

100. How definite is your present choice of an occupation?

A. I have made a definite choice.
B. I have made a likely choice.
C. I am undecided about my future occupation.

101. What grade were you in when you decided upon your present choice of an occupation?

A. I have not decided upon an occupation.
B. sixth grade or earlier
C. seventh or eighth grade
D. ninth grade
E. tenth grade

102. What three jobs would you like to have someday? Write your first, second, and third choice below.

_____

_____

_____

-x-

LEARNING ACTIVITY PACKAGE 1

Category: Applied Biological and Agricultural Occupations

Focus: Introduction to the Cluster

Activity: Discussion and Slide Set

Objective: At the conclusion of this lesson, the student will be able to explain the expected requirements of the course; list in writing the five occupational areas within this cluster; and describe on a student worksheet the importance of agriculture in the world of work.

EQUIPMENT, SUPPLIES, AND FORMS

1. 35 mm slide set and reel-to-reel tape entitled Youth Opportunities in Agriculture, Agri-Business, available from local Farm Supply Services, Inc. representative or purchased from Visual Educators, Inc., 1425 H Street, NW, Washington, DC 20005.

2. List of capsule descriptions for teacher use (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students an overview of this cluster: occupational areas to be investigated, activities to be performed, and the requirements of this cluster; and to make the students aware of the importance of agriculture in the world of work.

SUGGESTED PROCEDURE

This lesson includes capsule descriptions of each occupational area in this cluster. These descriptions were developed to help you explain the occupational information covered in this cluster.

The activities performed during this cluster are slanted toward local community input. Guest speakers and field trips make up about 40 percent of the program: games, contests, and films are second in importance and more traditional lectures and discussions have been kept to a minimum.

After you have identified each of the five occupational areas within the cluster, describe to the students the activities they will be doing. Finish the class by viewing the slide-tape presentation on Youth Opportunities in Agriculture, Agri-business. The students should be looking for the importance of agriculture in the world of work, not only on the local level but also nationally. They also should be looking for future occupational opportunities in the various areas presented in the slide series.

The success of this LAP depends largely on two elements. The first is your ability to transfer your enthusiasm for this program to the students. The second is using the slide-tape set, which does an excellent job of introducing the occupations in agriculture.

CAPSULE DESCRIPTIONS

I. Production Agriculture

A. Self-employment occupations in Animal Production (O.E. Code 01.0101) and/or Plant Production (O.E. Code 01.0102)

Job opportunities in this area involve the on-farm work of producing or growing crops and/or livestock. Farmers and ranchers are the producers of animal and plant products. Although off-farm agricultural occupations have become more important in the past few years, one must not forget that the foundation of most of the agricultural industry is farming.

Your ability to enter animal and/or plant production occupations as a self-employed person will probably require your having enough money or credit to get started as an owner-operator or as a tenant of an animal and/or plant production operation. Many young farmers and ranchers enter occupations in this area by working at home, getting livestock, crops, and equipment as a part of their supervised occupational experience program in high school, and eventually forming partnerships with their parents.

A common characteristic of jobs in this area is that the worker must have a knowledge of planting, breeding, feeding, and other management practices.

Self-employment occupations in animal and/or plant production require the individual to do many different jobs and make many decisions. His/her jobs may include manager, supervisor, and laborer, as well as bookkeeper and financier.

B. Paid-employment occupations in Animal Production (O.E. Code 01.0101) and/or Plant Production (O.E. Code 01.0102)

Job opportunities in this area primarily involve on-farm work as a paid employee of a livestock and/or crop production operation. In recent years the United States has been involved in an agricultural revolution that is having a tremendous influence on the employment opportunities in agricultural production occupations. In the minds of many persons, farming and ranching require that a person own, operate, and manage a farm or ranch. This was true a few years ago, but today many agricultural production operations are large business enterprises which hire farm managers, foremen, herders, caretakers, veterinarians, farm hands, and various other paid employees.

Paid-employment occupations in animal and/or plant production can be at several different levels ranging from a seasonal farmhand to animal scientist. Therefore, the educational requirements for this occupational area depend on the specific job. Actual on-farm experience working with plants and animals is beneficial but not essential.

II. Agricultural Mechanics Occupations (O.E. Code 01.0300)

Agricultural mechanics includes a wide variety of jobs. Knowledge of and skills in mechanics are a vital part of many jobs which may not be associated with agricultural mechanics. New jobs are continually being created to meet the changing needs of society; therefore, some of the agricultural mechanics occupations are found in urban areas. A new area of job opportunity is the area of environmental protection and pollution control. Much of the training necessary to perform occupations in environmental control is found in studying biological and agricultural sciences in combination with mechanics skills. This means that students can combine their mechanics skills with skills in other areas to qualify for new occupations. Agricultural mechanics includes such areas as engineering, agricultural construction, agricultural waste management, and agricultural equipment manufacturing.

III. Ornamental Horticultural Occupations (O.E. Code 01.0500)

The ornamental horticulture industry deals with the selection, production, maintenance, and care of ornamental plants and materials. Occupations in this area of work have at least one thing in common - ornamental plants. Areas of knowledge which are important for people who choose a career in this field include plant propagation, soil and fertilizers, horticultural mechanics, plant growth, plant identification, landscape design and management, insect and disease control, and plant care.

Opportunities for employment in the field of ornamental horticulture are excellent. The industry is expanding as people spend more money on landscape design, flowers, and recreational activities which involve the use of parks, golf courses, and wooded areas. Increased leisure time and a national concern for environmental quality are two other factors which have caused a steady growth in the ornamental horticulture industry.

Students who wish to plan a career in the field of ornamental horticulture will find that jobs exist at various competency levels. This means that one can select semiskilled or single-skill jobs, technical jobs, or professional-level jobs, depending on the amount of education one wishes to complete. Salaries and wages vary with the level of job competency. As in any field, those jobs which require limited amounts of experience and training do not pay high wages. However, there are opportunities for advancement for those persons who are willing to work and willing to prepare themselves for higher level positions. To some degree, the industry attracts the "luxury dollars." This means that some of the best opportunities are in areas where wealthy people reside. In general, one can assume that job opportunities in ornamental horticulture are most prevalent in urban and suburban areas. Most of the nurseries, greenhouses, floral shops, golf courses, parks, and sod farms are located near large towns or cities.

IV. Agricultural Products, Supplies, Sales, and Services

A. Agricultural Supply and Service Occupations (O.E. Code 01.0200)

A person who enjoys meeting people and is willing to accept responsibility can find many career opportunities in today's agricultural business world. Farmers and ranchers spend billions of dollars annually for supplies and services needed to produce crops and livestock. Agricultural businesses are constantly looking for dynamic individuals to perform jobs associated with providing farmers with agricultural supplies and equipment. These occupations may deal with the manufacturing, handling, distributing, and selling of supplies such as feed, seed, fertilizer, and farm equipment. Persons with an interest in business and with some basic knowledge and skills in agriculture are well suited for jobs of this kind. A knowledge of the company's product and how it benefits the user helps an employee give better service to customers.

There are agricultural businesses in almost every community. Their function is to provide supplies and services to agricultural producers and others. Agricultural supply businesses may range from a farm and garden supply store to an agricultural petroleum center. The supplies which farmers and ranchers purchase, rather than furnish themselves, are expected to increase. This will increase the number of jobs and employment opportunities in sales work. The sale of supplies frequently generates a demand for specialized services, such as applying fertilizer or chemicals, servicing equipment, and inspecting products.

Agricultural supply and service occupations offer a great opportunity for people with energy, enthusiasm, and appropriate training to enter and succeed in business.

B. Agricultural Products and Service Occupations (O.E. Code 01.0400)

Working with plant and animal products is interesting and challenging to many people. Improved methods of processing, inspecting, and marketing agricultural products have created new and exciting careers in agribusiness and industry. Occupations associated with agricultural products allow a trained person to use his/her knowledge of agricultural products while applying scientific and business principles. Personnel with various levels of education are needed to transform raw agricultural products into finished products.

Many steps are involved in moving raw agricultural products from their production locations to the processor and then to the consumer. Persons are needed to perform jobs such as buying, assembling, storing, packing, warehousing, advertising, selling, regulating, and inspecting. These functions and services are essential in the process of supplying "ready-to-eat" and "ready-to-wear" products to consumers throughout the world.

It is expected that the number of agribusinesses will increase in the future and that the demand for trained persons to process and distribute agricultural products will expand. Career opportunities are available for both city and farm youth. Some jobs that are growing at a fast rate will require more training and education. The jobs that can be performed by persons with less than a high school education are becoming fewer. Many of the semiskilled and skilled jobs require vocational and technical training at a secondary school or community college. Some jobs require a college degree.

V. Forestry, Natural Resources, and Environmental Control

A. Forest Conservation Occupations (O.E. Code 01.0601)

This group includes those jobs which are mainly concerned with the protection, management, and care of forest lands. Persons employed in these jobs prune trees to improve the quality of the timber, spray trees with pesticides to protect them from insects and diseases, and protect trees and wildlife from fire. Many of these jobs are done seasonally. For example, forest fire fighters are in demand during the summer months when fires in the forested areas are likely to happen. The jobs concerned with controlling forest pests and diseases or planting tree seedlings (reforestation) are assigned to foresters who work in laboratories or routine jobs, especially those who have had past experience in forestry work. In general, the work is performed outdoors or in woodlands and in all kinds of weather.

B. Soil Conservation (O.E. Code 01.0603) and Water Conservation (O.E. Code 01.0605) Occupations

Persons whose jobs are included in this group are college graduates with majors in soil science, range management, or related fields of study. A job as a soil conservation aide requires less than a college education. Generally, jobs in this cluster require that the individual know how to manage soil, water, and other natural resources for livestock and crop production, wildlife grazing, recreation, and other uses of our natural resources. The ability to get along with others and a genuine love for the outdoors are two important requirements for people employed in these jobs. In the future, there will be more job openings for people trained to work in soil and water conservation because of increased interest in recreation, conservation, and the environment.

C. Park and Recreation Occupations (O.E. Code 01.0602)

With the increased interest in physical fitness, improvement of transportation facilities, higher wages, and shorter working hours, more and more people are spending their leisure time in parks or recreational areas for picnics, nature study, games, etc. To satisfy this public interest, more and more game preserves and recreational areas are being developed.

In most cases, people take their vacations or have leisure time during the summer months, which means parks and other recreational areas must be open then for use by the public. Except for the managerial positions, employment in maintaining these recreational areas is open to high school graduates. The work is mostly outdoors and involves the management and protection of forest and recreational areas. Employees also are engaged in giving instruction to the public for using the parks and facilities properly.

D. Education and Research Occupations (O.E. Code 01.9900)

These jobs involve research, instruction, or other activities related to natural resources, wildlife, and recreation. Most of these jobs are found in universities and in some specialized government offices like the Natural History Survey, Geological Survey, and Department of Conservation. A requirement for most of these jobs is a college degree. However, with the nature of research studies being done, those with an advanced college degree are preferred. Work may be done both indoors and outdoors. Some positions require extensive traveling to many places, including other countries.

LEARNING ACTIVITY PACKAGE 2

Category: Agricultural Mechanics

Focus: Overview of Agricultural Mechanics

Activity: Filmstrip and Discussion

Objective: At the conclusion of this lesson, the student will be able to name at least 10 specific jobs found within the field of agricultural mechanics.

EQUIPMENT, SUPPLIES, AND FORMS

1. A filmstrip and tape recording entitled Think Big can be purchased as an Agricultural Career Kit for approximately $5.80 from: Vocational Agricultural Services, University of Illinois, 434 Mumford Hall, Urbana, IL 61001.
2. Local telephone directories.
3. Student worksheet: Occupations in Agricultural Mechanics (see sample enclosed in this learning package).
4. Handbook of Agricultural Occupations, Norman K. Hoover, Interstate Publishers, Danville, IL 61832.
5. Occupational Outlook Handbook.

RATIONALE

The purpose of this lesson is to give the students a brief overview of this occupational area, and to make them aware of the local employment opportunities within agricultural mechanics.

SUGGESTED PROCEDURE

Introduce the filmstrip, Think Big, and encourage the students to pay particular attention to specific job titles mentioned in the film.

After the filmstrip ask the student to complete the worksheets which accompany this lesson. Question 3 of the worksheet requires additional resource material (i.e., Handbook of Agricultural Occupations, Norman K. Hoover, Interstate Publishers, Danville, IL 61832, or Occupational Outlook Handbook, U.S. Department of Labor).

OCCUPATIONS IN AGRICULTURAL MECHANICS WORKSHEET

I. Using a local telephone directory, make a list of local businesses concerned with agricultural machinery and equipment.

A. _____ H. _____

B. _____ I. _____

C. _____ J. _____

D. _____ K. _____

E. _____ L. _____

F. _____ M. _____

G. _____ N. _____

II. Using the local newspaper want ads, make a list of occupational opportunities in the field of agricultural mechanics.

A. _____ H. _____

B. _____ I. _____

C. _____ J. _____

D. _____ K. _____

E. _____ L. _____

F. _____ M. _____

G. _____ N. _____

III. Select one of the jobs listed below and write a short job description of it. (Use only resource material available within the classroom.)

A. Agricultural Manufacturing Field Representative
B. Agricultural Traffic Manager
C. Livestock Equipment Service Person
D. Agricultural Equipment Service Instructor
E. Conveyor Systems Assembler
F. Milling Equipment Feedstuffs Service Person
G. Lawn and Garden Care Equipment Mechanic
H. Rental Service Mechanic
I. Diesel Mechanic
J. Heavy Equipment Operator
K. Recreational Vehicle Service and Repair Person
L. Agricultural Engineer
M. Barge Loader
N. Livestock Hauler

LEARNING ACTIVITY PACKAGE 3

Category: Agricultural Mechanics

Focus: Jobs in Agricultural Mechanics

Activity: Job Game

Objective: At the conclusion of this lesson, the student will be able to identify at least five specific job titles in the field of agricultural mechanics by reading the job descriptions and matching each job title to its description.

EQUIPMENT, SUPPLIES, AND FORMS

1. Copy of game rules for the Job Game (see sample enclosed in this learning package).
2. List of job titles from the field of agricultural mechanics (see sample enclosed in this learning package).
3. Game board, 24 job cards, and 20 chance cards (to be made according to instructions below).
4. List of job descriptions for making game cards (see sample enclosed in this learning package).
5. List of instructions for game board arrows (see sample enclosed in this learning package).
6. Diagram of game board (see sample enclosed in this learning package).
7. One single die per game board.

RATIONALE

The purpose of this lesson is to give the student a summary of the occupations within the field of agricultural mechanics.

SUGGESTED PROCEDURE

You will need a little extra preparation time for this lesson. You will need time both to construct the game board and to put the material on the following pages onto index cards.

MAKING THE GAME

Job cards, chance cards, and a game board composed of arrows are needed for the game. The materials to be put on the job cards, chance cards, and game board arrows are all printed on the following pages. Make as many copies of these pages as you need to allow all the students in your class to play the game at one time. (Also make extra copies of the list of jobs below.)

Cut out the 24 job descriptions on the following pages and glue or paste each to a 4" x 6" card. On the reverse side of each card, print "JOB" in large letters.

Cut out the 20 chance card items (see below). Affix each to a 3" x 5" card. On the reverse side of each card, print in large letters "CHANCE."

The game board should be made of approximately 120 different-colored arrows pasted onto heavy-guage poster board, following the route indicated on the game board diagram (see page 28 below). Cut out the 24 game board arrow items (see below) and affix each to an arrow. These 24 arrows should be distributed among the blank arrows along the route.

For directions on how to play the game, see below.

JOB GAME

HOW TO PLAY THE GAME

To play the game, stack the job cards face down in the appropriate place on the game board. Do the same with the chance cards. A roll of the die determines the number of spaces a player may advance during his/her turn. Each time a player lands on a colored arrow he/she does as the arrow instructs.

SPECIAL RULES

1. Pay Day arrows. Each time a player lands on or passes a pay day arrow he/she receives 25 points.
2. Job arrows. Each time a player lands on an arrow marked jobs, he/she must ask another player to pick up a job card and read the abbreviated job description to him/her. After consulting the list of job titles for the occupational area (see below), the player indicates which job title matches the description. If he/she answers correctly, the player receives the number of points assigned to that job title. If, however, the player misses the question, no points are awarded. After each job card is read, it is placed at the bottom of the stack.
3. Chance arrows. Each time a player lands on an arrow marked chance, he/she picks a chance card from the stack and does as instructed.
4. Revenge arrows. Any time a player lands on a revenge arrow, that player has the option of taking 1/2 the total number of points from any player in the game or sending any player in the game back 25 spaces.
5. When two paths are indicated on the game board, the player may take the path of his/her choice.

Each player keeps track of his/her number of points. The player with the highest number of points at the end of the game wins. As an incentive for finishing first, an additional bonus of 100 points is awarded to the first person to finish the game.

OCCUPATIONS IN AGRICULTURAL MECHANICS

Agricultural Equipment

1. Agricultural Equipment Service Instructor
2. Automatic Control Systems Service Person
3. Bulk Milk Systems Service Person
4. Electric Motors Service Person
5. Heating Systems Service Person
6. Livestock Equipment Service Person
7. Medication Systems Service Person
8. Refrigeration Systems Service Person
9. Short-wave Systems Service Person
10. Testing Equipment Service Person
11. Ventilation Systems Service Person
12. Water Systems Service Person

Agricultural Processing Equipment

1. Artificial Insemination Equipment Mechanic
2. Conveyor Systems Assembler
3. Grading, Sorting, and Inspecting Equipment Mechanic
4. Hatchery Equipment Mechanic
5. Meat Processing Equipment Mechanic
6. Milling Equipment Feedstuffs Service Person
7. Milling Equipment Food Service Person
8. Packaging Equipment Service Person
9. Pelleting Equipment Service Person
10. Ripening Room Systems Service Person - Fruit
11. Specialty Food Processing Equipment Mechanic
12. Testing Equipment Mechanic
13. Vegetables and Fruits Equipment Service Person

OCCUPATIONS IN AGRICULTURAL MECHANICS (CONT.)

Agricultural Engineering

1. Agricultural Engineer
2. Agricultural Engineer Technician
3. Agricultural Equipment Designer
4. Agricultural Manufacturing Designer
5. Agricultural Processing Equipment Designer
6. Bioengineer
7. Bionics Engineer
8. Farm Machinery Designer
9. Farmstead Structures Designer
10. Meteorological Aide
11. Soil Conservation Engineer
12. Surveyor
13. Surveyor's Aide

Agricultural Structures

1. Agricultural Carpenter
2. Agricultural Electrician
3. Agricultural Structure Designer
4. Concrete Forms Worker
5. Concrete Mixer
6. Ditcher
7. Excavator
8. Farm Building Erector
9. Farmstead Planner
10. Lightning Rod Installer
11. Prefabrication Worker
12. Silo, Grain Bin Erector
13. Truss Maker
14. Well Driller

Horticulture Equipment

1. Automatic Control Devices Service Person
2. Fumigation Equipment Service Person
3. Heating Systems Service Person
4. Hotbed Equipment Service Person
5. Lawn and Garden Care Equipment Mechanic
6. Power Saw Equipment Mechanic
7. Rental Service Mechanic
8. Spraying Equipment Service Person
9. Ventilation Systems Mechanic
10. Watering Systems Service Person

OCCUPATIONS IN AGRICULTURAL MECHANICS (CONT.)

Agricultural Wastes Handling

1. Compost Manufacturer
2. Crusher Operator
3. Ecological Systems Researcher
4. Environmental Protection Agency Inspector
5. Environmental Protection Agency Monitor
6. Environmental Protection Agency Sampler
7. Methane Generator Operator
8. Odor-control Agents, Sales and Service
9. Oxidation Systems Worker
10. Animal Waste Recycling
10. Systems Researcher
11. Animal Waste Recycling Systems Technician
12. Sludge Spreader
13. Treatment Plant Operator
14. Waste Compressor Operator
15. Waste Hauler
16. Waste Storage Structures Installer

Agricultural Machines

1. Blacksmith
2. Custom Machine Operator
3. Cutter, Arc and Gas
4. Diesel Mechanic
5. Farm Hydraulic Systems Mechanic
6. Farm Machinery Monitor Systems Mechanic
7. Farm Machinery Parts Worker
8. Farm Machinery Service Center Foreman
9. Farm Machinery Service Center Operator
10. Farm Machinery Set-up Person
11. Heavy Equipment Operator
12. Heavy Equipment Mechanic
13. Marine Motors Mechanic
14. Small Engines Mechanic
15. Tractor Mechanic
16. Welder, Arc and Gas

OCCUPATIONS IN AGRICULTURAL MECHANICS (CONT.)

Recreation and Soil Conservation

1. Conservation Equipment Mechanic
2. Construction and Maintenance Worker
3. Farm Acreage Checker
4. Forest Fire Fighting Equipment Mechanic
5. Heavy Equipment Operator
6. Land Reclamation Engineer
7. Park Development Planner
8. Park Maintenance Worker
9. Recreational Vehicle Mechanic
10. Soil Conservation Engineer
11. Soil Conservation Service Field Work

Materials Handling

1. Air Freight Delivery Person
2. Barge Loader
3. Bulk Materials Hauler
4. Cooked Garbage Hauler
5. Farm Feed Distribution Systems Installer
6. Fork Lift Operator
7. Grain Conveyance Installer
8. Grain Inspector
9. Livestock Hauler

Agricultural Manufacturing

1. Assembly Foreman
2. Design Technician
3. Field Representative
4. Inspector
5. Inspector's Helper
6. Test Analyzer
7. Tester
8. Traffic Manager

JOB CARDS

1. I am employed in the field of Agricultural Machines.

I may be the head mechanic in one type of organization. In another type of organization, my work may be largely clerical and administrative. I schedule jobs, check job tickets, keep records of parts used, and, in general, organize the work of several mechanics and mechanics' helpers. To be of most value to my company, I should be familiar with the work required of mechanics.

For 100 points, what is my job?

Farm Machinery Service Center Operator

2. I am employed in the field of Agricultural Processing Equipment.

I install, inspect, and repair the equipment used in preparing, storing, and transporting feeds. Generally, I am in charge of a crew of employees who carry out my directions in setting up the mill equipment. My job consists of developing plans for each situation, coordinating necessary equipment systems, and installing the various systems into a complete mill unit.

For 120 points, what is my job?

Milling Equipment Feedstuffs Service Person

3. I am employed in the field of Materials Handling.

I am responsible for the loading operation of barges for water transport of grains, fertilizers, chemicals, and fuels used in agribusiness. I supervise the transfer of materials, check for proper balancing of loads, check for correct cargo weight, and see that safety measures are being followed. Although I am not responsible for checking the quality of cargo being hauled, I am responsible for assuring that the quality is not damaged by the loading.

For 60 points, what is my job?

Barge Loader

4. I am employed in the field of Recreation and Soil Conservation.

I make reports on land use for governmental landbank programs. My job consists of measuring fields to obtain acreage figures for crop allotments. I also keep information concerning the production and acreage of alloted crops along with records of amounts of lime and fertilizer payments issued by the Soil Conservation Service.

For 100 points, what is my job?

Farm Acreage Checker

5. I am employed in the field of Agricultural Wastes Handling.

The machine I operate is used to shred urban refuse, agricultural processing wastes and/or livestock wastes into small pieces and compost by crushing and compacting. My job is to see that the shredder is functioning properly so that the refuse is torn into small particles in order for it to decompose when covered with soil.

For 160 points, what is my job?

Crusher Operator

6. I am employed in the field of Materials Handling.

I transport farm animals from farm to farm, or from farm to market. I am responsible for the animals and provide care to the animals before and during transport.

For 50 points, what is my job?

Livestock Hauler

7. I am employed in the field of Agricultural Wastes Handling.

I use waste products from confinement livestock production units to prepare compost for retail sales in home and garden stores. I prepare dehydrated animal waste for fermentation and/or decomposition. I then package the compost for distribution through home-and-garden retail outlets.

For 200 points, what is my job?

Compost Manufacturer

8. I am employed in the field of Agricultural Equipment.

I am responsible for the installation and repair of livestock equipment systems. I am often the sales person who must be able to install and repair the systems that are sold. I may own my own business, work for another local business, or work as a company representative.

For 140 points, what is my job?

Livestock Equipment Service Person

9. I am employed in the field of Agricultural Structures.

I develop structural systems to meet the needs of many types of operations. I often investigate the particular problems to be solved with a new system. After gathering information, I will analyze the facts and develop solutions to the problems. I do not usually supervise the completion of the structures system.

For 140 points, what is my job?

Agricultural Structures Designer

10. I am employed in the field of Agricultural Equipment.

I teach agricultural students the installation, maintenance, and repair of agricultural equipment. I am responsible for curriculum planning in relation to student programs. I also may assist graduating students in finding jobs in the area of agriculture equipment service.

For 180 points, what is my job?

Agricultural Equipment Service Instructor

11. I am employed in the field of Recreation and Soil Conservation.

I operate and maintain various types of large machinery used in agricultural construction such as ponds, waterways, terraces, landscaping, land sharing, land reclamation, building site preparation, excavation, trenching, and silo erection as well as loading agricultural minerals or resources.

For 100 points, what is my job?

Heavy Equipment Operator

12. I am employed in the field of Agricultural Machines.

I use hand tools, precision measuring instruments, and metal-working tools to diagnose trouble, disassemble engines and examine parts for defects and excessive wear. I repair and maintain diesel engines used to power tractors, trucks, heavy construction equipment, welders, and towboats.

For 50 points, what is my job?

Diesel Mechanic

13. I am employed in the field of Agricultural Manufacturing.

I am concerned with the most efficient way of moving materials to manufacturing plants and through other processes before they are ready for sale to the public.

For 120 points, what is my job?

Traffic Manager

14. I am employed in the field of Agricultural Structures.

I plan, layout, assemble, install, and repair farm structures and/or their components. My work in agriculture is often quite distinct from other types of work. I may build and maintain pole-frame sheds, stud-frame livestock confinement buildings, barns, forms for concrete waste-holding pits or silos, as well as other farm structures.

For 60 points, what is my job?

Agricultural Carpenter

15. I am employed in the field of Agricultural Machines.

I cover a wide range of jobs. My work may include one or more of the following processes: electric, oxy-acetylene, spot, and inert gas welding. Frequently, I will work as a general shop mechanic when there is not enough welding to keep me busy. The range of jobs outside my specialty is likely to be rather wide, and will depend upon the current situation. If new implements have just been received, I will help set them up. At other times equipment delivery might be my responsibility.

For 50 points, what is my job?

Agricultural Machinery Welder

16. I am employed in the field of Agricultural Processing Equipment.

I put together the conveyor system in the processing or production plant. Conveyance systems are used in grain storage, livestock farms, grain processing plants, meat processing, and shipping departments. I am usually not only responsible for installing the system satisfactorily, but I may also be responsible for checking and maintaining it.

For 80 points, what is my job?

Conveyor Systems Assembler

17. I am employed in the field of Agricultural Engineering.

I use precision instruments to determine the location of points, lines, contours, and elevations. Tables and reports are prepared from the information collected. Often I use this information to prepare maps, record plots, and write legal descriptions of land tracts for leases, deeds, and other documents.

For 100 points, what is my job?

Surveyor

18. I am employed in the field of Agricultural Machines.

Farm machinery is crated and shipped partially assembled. I am engaged primarily in assembling or setting up new machines that have been shipped from the factory to farm machinery dealers. My work involves the use of mechanical equipment. Dexterity in the use of tools is important. It is necessary to be able to select the proper equipment and make effective use of such tools as speed wrenches and hydraulic jacks. I must be able to interpret and accurately follow detailed instructions from the set-up manual.

For 50 points, what is my job?

Farm Machinery Set-up Person

19. I am employed in the field of Agricultural Engineering.

I apply scientific research and engineering principles to develop or improve technology that will increase agricultural productivity. The fundamental disciplines of engineering, such as electrical, hydraulic, structural, and mechanical, are a necessary part of my work. Specialties in my field include machine design, farm structures, electric power, soil and water conservation, teaching and extension.

For 150 points, what is my job?

Agricultural Engineer

20. I am employed in the field of Agricultural Manufacturing.

I represent the manufacturing firm as a trouble shooter, demonstrator, sales person, and promotions expert. I work with a wide variety of people such as farmers, dealers, salespeople, reporters, mechanics, designers, and management personnel. Part of my responsibility is to improve dealer service and business management, represent the company at promotional events, and perhaps be a negotiator in settling claims with dissatisfied customers.

For 180 points, what is my job?

Field Representative

21. I am employed in the field of Recreation and Soil Conservation.

I repair and service the motors used to power small boats, pontoons, pleasure water craft, snowmobiles, and all-terrain vehicles (ATV). I work with the propellers, transmissions, electrical circuits, pumps, steering, and other such equipment used on recreational vehicles.

For 60 points, what is my job?

Recreational Vehicle Mechanic

22. I am employed in the field of Horticulture Equipment.

I repair and service the equipment used to care for lawns and gardens. I am responsible for the repair of small engines, spraying, cutting, shredding, mulching, tilling, trenching, augering, and mowing devices. I may work for landscape firms, city or company maintenance departments, or be self-employed.

For 60 points, what is my job?

Lawn and Garden Care Equipment Mechanic

23. I am employed in the field of Agricultural Machines.

I work with parts and supplies. The businesses I work for often specialize in more than one line of equipment and stock parts for several makes of machines, a wide variety of farm hardware, and other supplies. My work varies with the size of the business and items that are handled. Specialization in this work is possible only in a large business. In general, I sell supplies and parts both over the counter and by phone; order parts and keep a store inventory; receive supplies and stock shelves and bins; make up statements, submit bills, keep records, handle cash and credit; and make adjustments on warranties.

For 100 points, what is my job?

Farm Machinery Parts Worker

24. I am employed in the field of Horticulture Equipment.

I am responsible for the repair and maintenance of machines which are rented to the public. Since the individual machines are often rented for a one-, two-, or three-day period, this increases the use and often misuse of a machine. Therefore, I must make sure that the machine is properly serviced, repaired, and safe for the renter to use.

For 100 points, what is my job?

Rental Service Mechanic

CHANCE CARDS

You lose a lawsuit
You lose 60 points

Buy a new home
Pay 75 points

If your number was 3,
add 100 points

If your number was 4,
add 50 points

Lose 10 times
number on dice

Inherit gold mine
Collect 50 points

Pay property tax
of 40 points

Give 20 points
To charity

Collect 10 times
number on dice

Buy new car
Pay 15 points

You find oil
Collect 75 points

Taxes
Pay 15 points

Your dog bites neighbor
Lose 25 points

Uncle in jail
Pay 10 points

Big win at races
Collect 60 points

Move back
10 spaces

Careless Driving Ticket
Lose 30 points

Advance
6 spaces

You win lottery
Collect 100 points

You have been robbed
Lose next pay check

GAME BOARD ARROWS

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Pay Day

Revenge

Revenge

Revenge

You are lost
Lose a turn

Car breaks down
Lose turn

Put on Probation
Lose turn

Day off--relax

Sick Day
Lose turn

Reckless driving
Lose turn

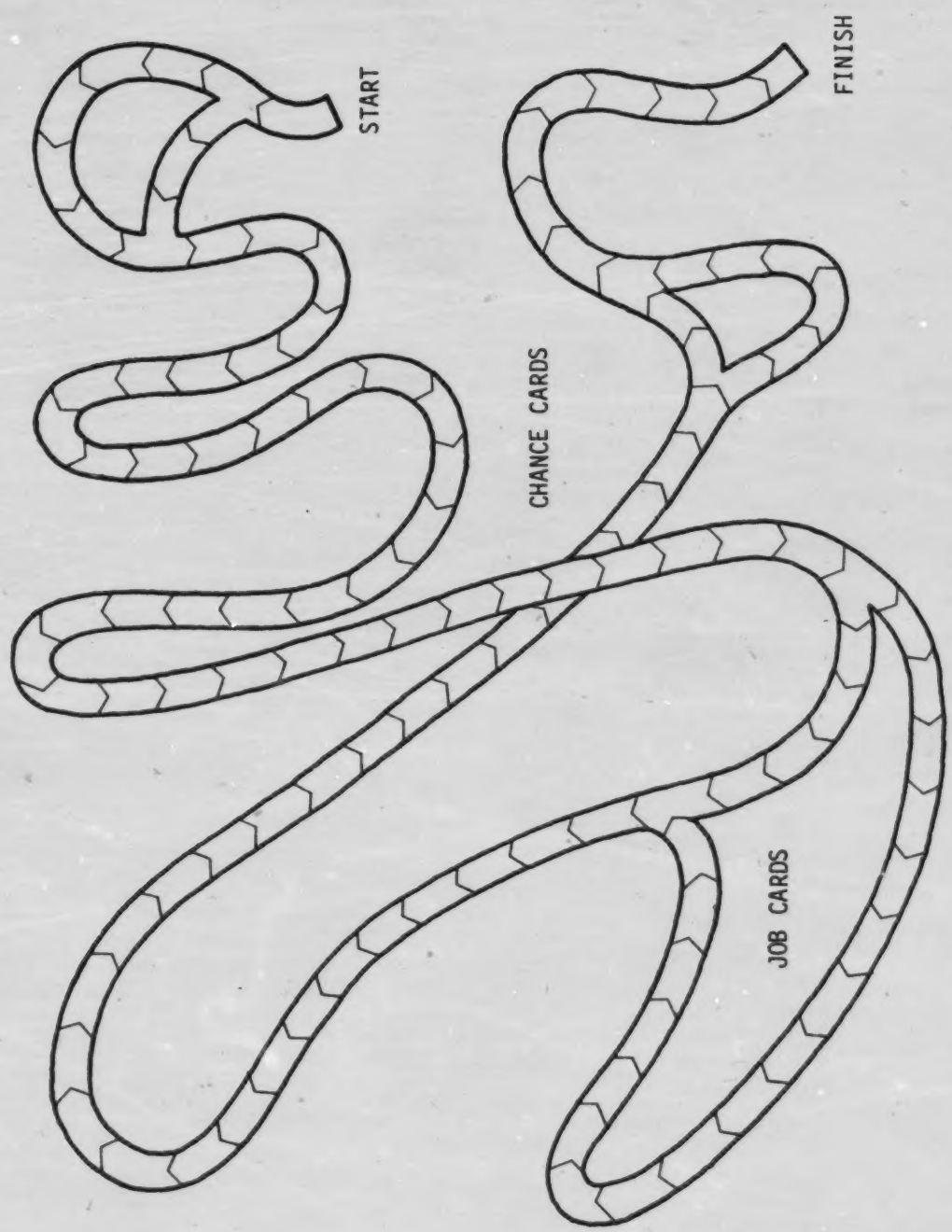
Vacation day--relax

Tornado blows you
Back to start

Slow start
Roll again

Happy day
Go directly to finish

GAME BOARD DIAGRAM



LEARNING ACTIVITY PACKAGE 4

Category: Agriculture Mechanics

Focus: Farm Machinery Dealer

Activity: Field Trip: Farm Machinery Dealer

Objective: At the conclusion of this lesson, the student will be able to identify and record on a student worksheet some of the responsibilities, educational requirements, and approximate salary ranges for a farm machinery dealer.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Looking at a Career in Farm Machinery (see sample included in the back of this notebook).

2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose students to careers in farm machinery dealership. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs and to gain information and experiences not normally available from the classroom.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. Such things as transportation and parental permission slips are best handled several days before the actual trip.

The people who will be talking with the students should be aware of the objective of the lesson. If possible, they should be given a list of questions the students are likely to have. You might ask if some of the students on the trip could assist in one of the duties of a farm machinery dealer (i.e., checking on parts, marking the prices on items, assisting in the bookkeeping).

If such a resource person and farm machinery facility is not available in your area, you may be able to contact other resource persons such as a farm manufacturer's field representative, farm machinery parts person, or a tractor mechanic.

LEARNING ACTIVITY PACKAGE 5

Category: Agricultural Mechanics

Focus: Land Surveyor

Activity: Using A Transit

Objective: At the conclusion of this lesson, the student will be able to focus a transit, calculate different elevation points on the school campus, and record these findings on a worksheet.

EQUIPMENT, SUPPLIES, AND FORMS

1. Transit and surveyor's rod (these may be rented from a local rent-all store, or check your mathematics department).

RATIONALE

The purpose of this lesson is to give students experience working with some of the tools that a land surveyor uses.

SUGGESTED PROCEDURE

Before class begins, you will need to place several wooden stakes at various points on the school campus.

You might introduce this lesson by discussing the importance of surveying and some of the methods involved in surveying work. After the students have discussed this, bring out the transit and briefly explain how it works.

The transit or surveyor's instrument is used by many people in different occupations. It might be used by a vocational agriculture teacher, an agricultural engineer or a contractor. It might be used to establish the contour of the land, the height of a farm dam, or establish the grade for a foundation.

The transit is a telescope used to aid the eye. It can be held in your hands or placed on a tripod. When held in a level position it will give you a line of sight at that level from the transit to the target.

By using a surveyor's rod, and leaving the transit at the same point, you can determine elevation points by focusing on different targets.

The surveyor's rod will measure the vertical distance from the line of sight (through the transit) down to a target point. This point may be the ground, the top of a wooden stake, a step, or any other target you select.

After you have explained the use of the transit, take the class outside and allow each student to participate in the following activities:

1. Focus the transit on some distant object.
2. Place a surveyor's aide at different stakes and determine the elevation of each stake. Record the elevations on paper.

LEARNING ACTIVITY PACKAGE 6

Category: Agricultural Mechanics

Focus: Land Mapping

Activity: Making Contour Maps

Objective: At the conclusion of this lesson, the student will be able to demonstrate by making a topographical map at least one occupational skill in surveying and mapping.

EQUIPMENT, SUPPLIES, AND FORMS

1. Site box with sand.
2. Level bar.
3. Stadia rod.
4. Nail for holding level bar on site box.
5. Student worksheet grid chart (see sample enclosed in this learning package).
6. Student copies of directions for making map (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give students practice performing a skill useful in surveying and mapping.

SUGGESTED PROCEDURE

Kits for this activity are available from The Damon/Education Division, 80 Wilson Way, Westwood, MA 02090.

However, the materials required for this activity can be made easily. You will need five plastic pans (14" x "12" x 6"), sand, five wooden slats (drilled as illustrated below), five graduated rods, and a grid chart (provided with this lesson).

If you are making your own equipment, consult the following list of specifications.

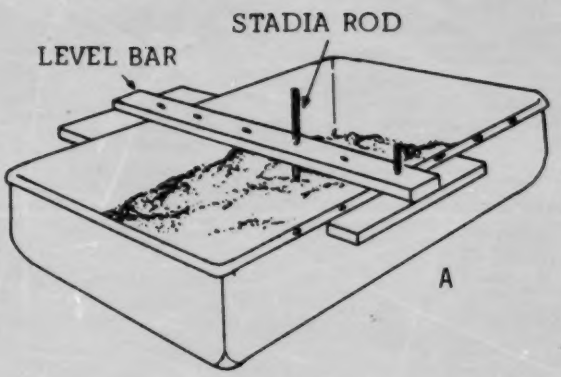
1. The pan is 14" long, 12" wide, and 6" deep.
2. The 13 holes along the top edges of the pan are 3/4" apart and large enough for a nail or pin.
3. Use a 1/4" x 10" dowel rod for the stadia rod. Each mark on the stadia rod represents 50 feet in elevation. The marks are 3/8" apart.

   - 000 = sea level
   -
   - 50
   -
   - 100
   -
   - 150
   -
   - 200

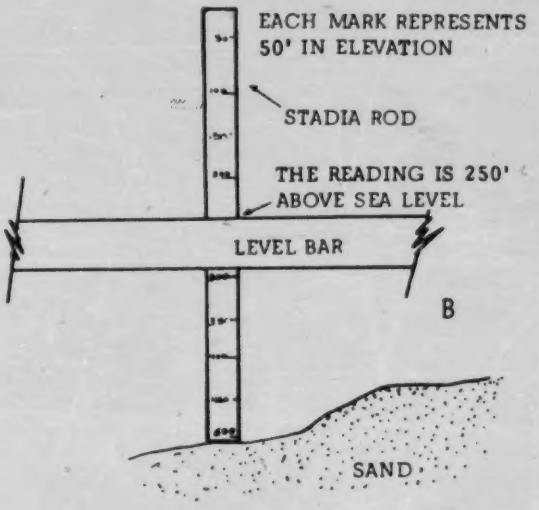
   - 800 = 800 feet above sea level
4. The holes drilled in the slats are 5/16" in diameter with nine holes equally spaced across the opening of the pan.

MAKING THE MAP

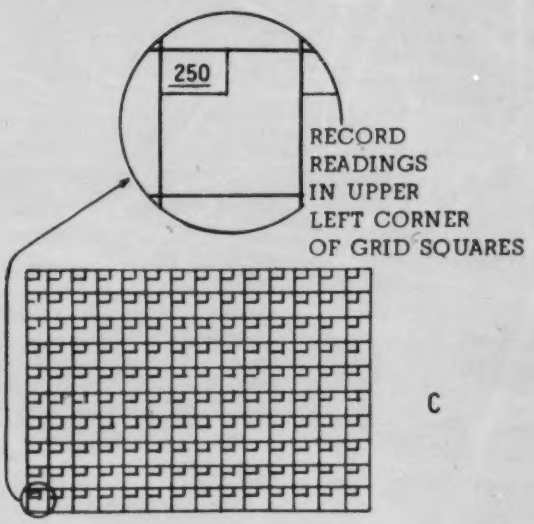
1. Make a large hill of sand in the middle of the pan.
2. Place the level bar on one end of the site box.
3. Place the graduate stadia rod into the first hole of the level bar in the lower lefthand corner (see illustration A).
4. Read the elevation on the stadia rod to the nearest 50 ft. (see illustration B).
5. Record the elevation in the upper lefthand corner of the first square on the grid chart (see illustration C).
6. Move the stadia rod to the next hole and record the elevation in the square above the first elevation. Continue the procedure until all of the elevations are recorded (see illustration D).
7. Using the same grid chart, connect with a line all of the points having the same elevations. These are called Contour Lines (see illustration E).



A

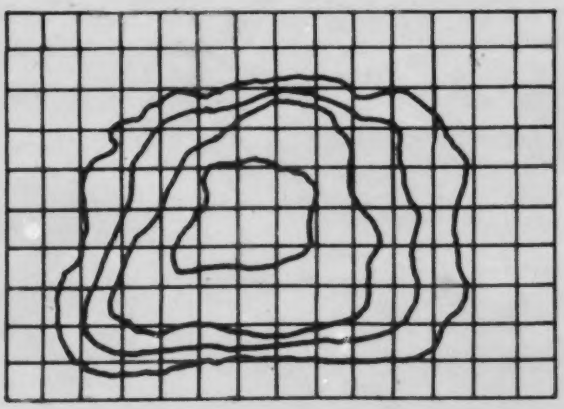


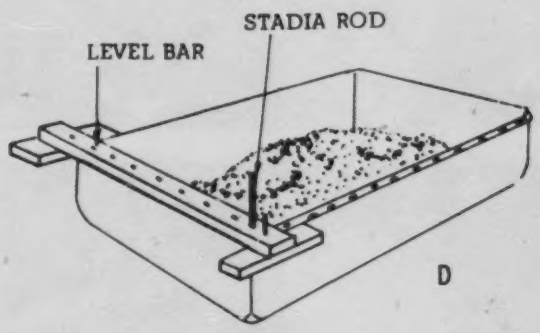
B



C

TOPOGRAPHIC GRID CHART

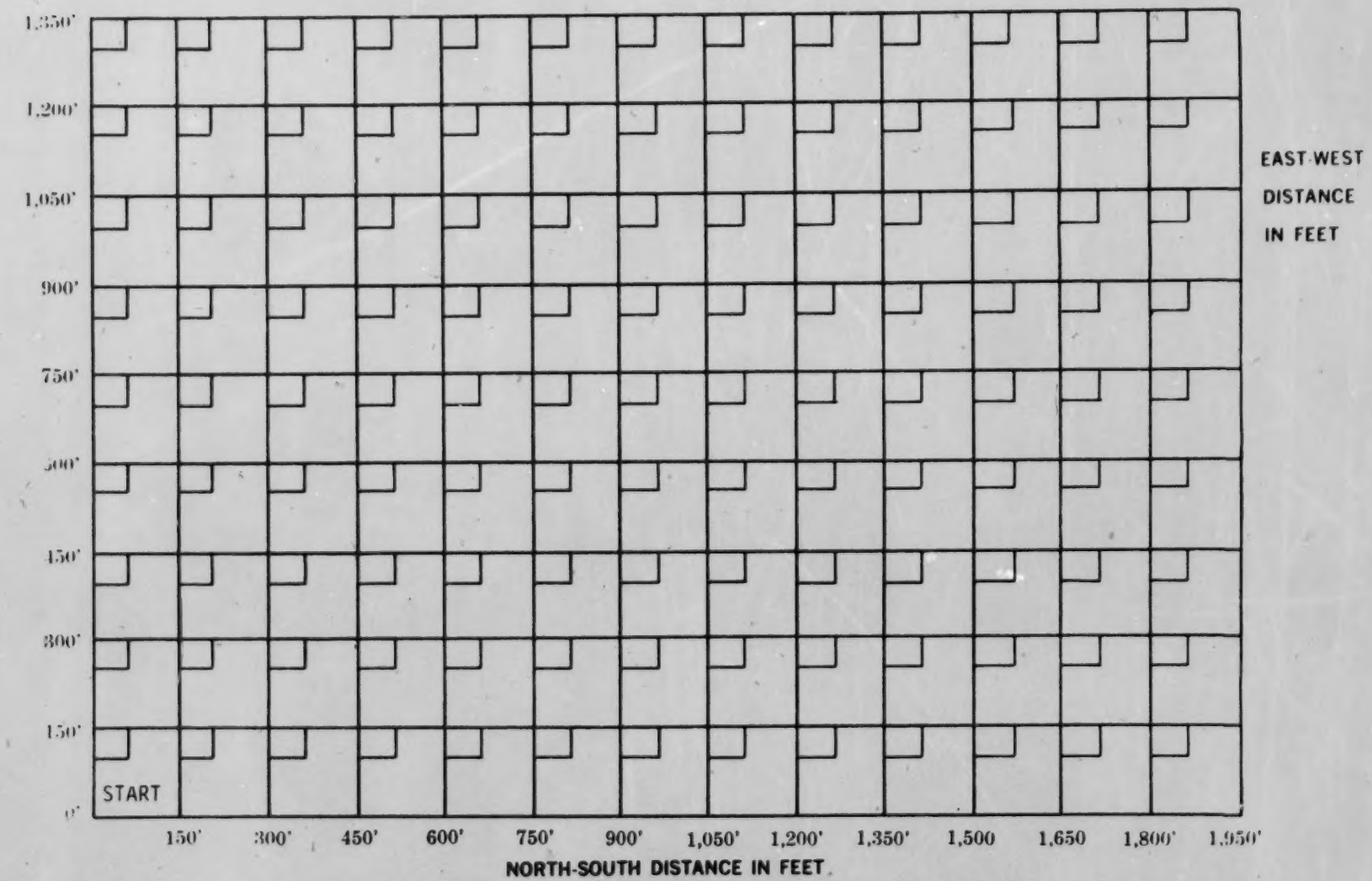

E



D

PROCEDURE:

1. Record readings for each point in upper left-hand corner of each square.
2. Draw contour lines to connect all like numbers.



LEARNING ACTIVITY PACKAGE 7

Category: Agricultural Mechanics

Focus: Agricultural Structures

Activity: Designing an Agricultural Structure

Objective: At the conclusion of this lesson, the student will be able to identify and draw a simple plan of at least one agricultural structure.

EQUIPMENT, SUPPLIES, AND FORMS

1. List of individual or small group activities for investigating agricultural mechanics occupations (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students the opportunity to experience some of the tasks involved in the design, construction, and maintenance of agricultural structures.

SUGGESTED PROCEDURE

The students should be aware of the fact that occupations in agricultural mechanics involve more than engine repair. Other opportunities are available in agricultural structures. The design, construction, and maintenance of agricultural structures involve thousands of people in well-paying, year-round jobs.

Tell the students that they have the option of working alone or in small groups on the assignment.

The students are to select one of the possible projects described below and develop it. Ask them to turn in their completed projects when they are finished. If time permits, have the students present their projects to the class.

POSSIBLE STUDENT PROJECTS

1. Identify and list those businesses in the community which employ people in agricultural construction jobs. The phone book or city business directory will be of help in doing this.
2. Obtain and examine some blueprints. Ask an architect or shop instructor to help in learning how to read them. Draw to scale a plan for a new farm building.
3. Gather materials to make a model farm including farm buildings. Papier maché on a board can be used for the ground. Paint, and add buildings made from construction paper. Dried weeds, grasses, or pine cones make beautiful trees. Ponds, fences, drives, etc., may be added.
4. Make drawings or models of the agricultural buildings needed by a variety of producers. Show, for example, how a cotton grower's needs are different from a soybean or dairy farmer's needs.
5. Write or visit a company dealing with agricultural structures. Ask for information about the types of materials used in farm buildings. Try to find out why certain materials are better for specific buildings. Make a chart showing the different types of farm buildings, the best material for each, and why it is best. Pictures should be used to further illustrate the structures.
6. Examine farm buildings in the area to find out the construction methods and types of materials which are used. List these and describe them.
7. Select one of the agricultural structures occupations suggested and research it. If possible, interview someone in this area. Gather the following information from the interviewee and any reference material available:
    a. special skills and aptitudes required
    b. educational requirements
    c. working conditions and setting
    d. employment possibilities (including source of career placement information)
    e. effect of training and experience on earning potential
    f. summer or seasonal job opportunities
8. Design a packet of materials which introduces occupations in agricultural mechanics. Include pictures of people at work, equipment used, and the work setting. Information gathered in Project 7 above could be recorded on tape to accompany the packet.
9. Compare the agricultural structures occupation chosen with any other interesting occupation. What educational requirements, skills, settings, and other characteristics are common to both?

LEARNING ACTIVITY PACKAGE 8

Category: Agricultural Products, Supplies, Sales, and Services

Focus: Jobs in Agricultural Products, Supplies, Sales, and Services

Activity: Job Game

Objective: At the conclusion of this lesson, the student will be able to identify at least five specific job titles in the field of agricultural products, supplies, sales, and services by reading the job descriptions and matching the job title to its description.

EQUIPMENT, SUPPLIES, AND FORMS

1. Copy of game rules for Job Game (see sample enclosed in this learning package).
2. List of job titles from the field of Agricultural Products, Supplies, Sales, and Services (see sample enclosed in this learning package).
3. Game board, 18 job cards, and 20 chance cards (to be made according to instructions below).
4. List of job descriptions to make job cards (see sample enclosed in this learning package).
5. List of items to be put on game board arrows (see sample enclosed in this learning package).
6. Diagram of game board (see sample enclosed in this learning package).
7. One single die per game board.

RATIONALE

The purpose of this lesson is to give the student a summary of the occupations within the field of agricultural products, supplies, sales, and services.

SUGGESTED PROCEDURE

You will need a little extra preparation time for this lesson. You will need time both to construct the game board and to put the material on the following pages onto index cards.

MAKING THE GAME

Job cards, chance cards, and a game board composed of arrows are needed for the game. The materials to be put on the job cards, chance cards, and game board arrows are all printed on the following pages. Make as many copies of these pages as you need to allow all the students in your class to play the game at one time. Also, make extra copies of the list of jobs below.

Cut out the 18 job descriptions on the following pages and glue or paste each to a 4" x 6" card. On the reverse side of each card, print "JOB" in large letters.

Cut out the 20 chance card items (see below). Affix each to a 3" x 5" card. On the reverse side of each card, print "CHANCE" in large letters.

The game board should be made of approximately 120 different-colored arrows pasted onto heavy-guage poster board, following the route indicated on the game board diagram (see below). Cut out the 24 game board arrow items (see below) and affix each to an arrow. These 24 arrows should be distributed among the blank arrows along the route.

For directions on how to play the game, see below.

JOB GAME

HOW TO PLAY THE GAME

To play the game, stack the job cards face down in the appropriate place on the game board. Do the same with the chance cards. A roll of the die determines the number of spaces a player may advance during his/her turn. Each time a player lands on a colored arrow, he/she does as the arrow instructs.

SPECIAL RULES

1. Pay Day arrows. Each time a player lands on or passes a pay day arrow he/she receives 25 points.
2. Job arrows. Each time a player lands on an arrow marked "jobs," he/she must ask another player to pick up a job card and read the abbreviated job description to him/her. After consulting the list of job titles (see below) for the occupational area, the player indicates which job title matches the description. If answered correctly, the player receives the number of points assigned to that job title. If, however, the player misses the question, no points are awarded. After each job card is read, it is placed at the bottom of the stack.
3. Chance arrows. Each time a player lands on an arrow marked "chance," he/she picks a chance card from the stack and does as instructed.
4. Revenge arrows. Any time a player lands on a "revenge" arrow, that player has the option of taking 1/2 the total number of points from any player in the game or sending any player in the game back 25 spaces.
5. When two paths are indicated on the game board, the player may take the path of his/her choice.

His/her total number of points is kept track of by each player. The player with the highest number of points at the end of the game wins. As an incentive for finishing first, an additional bonus of 100 points is awarded to the first person to finish the game.

OCCUPATIONS IN

AGRICULTURAL PRODUCTS, SUPPLIES, SALES, AND SERVICES

Chemicals Cluster

1. Chemical Applicator
2. Agricultural Chemical Mixer
3. Agricultural Chemical Supply Warehouse Person
4. Agricultural Chemist
5. Aircraft Helper
6. Chemical Supply Manager
7. Crop Sprayer
8. Exterminator
9. Agricultural Chemical Sales Person

Feed Cluster

1. Feed Grain Buyer
2. Feed Grinder
3. Feed Mill Superintendent
4. Feed Mixer Equipment Operator
5. Feed Processing Supervisor
6. Feed Researcher
7. Feed Sales Manager
8. Feed Sales Person
9. Feed Warehouse Person

Seed Cluster

1. Germination Worker
2. Seed Analyst
3. Seed Cleaner
4. Seed Producer
5. Seed Researcher
6. Seed Sales Manager
7. Seed Sales Person
8. Seed Supply Manager
9. Seed Warehouse Worker

Fertilizer Cluster

1. Batch Weigher
2. Fertilizer Applicator Operator
3. Fertilizer Field Person
4. Fertilizer Mixer
5. Fertilizer Plant Manager
6. Fertilizer Sales Manager
7. Fertilizer Sales Person
8. Fertilizer Service Manager
9. Fertilizer Warehouse Worker
10. Sampler
11. Soil Scientist

OCCUPATIONS IN

AGRICULTURAL PRODUCTS, SUPPLIES, SALES, AND SERVICES (CONT.)

Petroleum Cluster

1. Petroleum Engineer
2. Petroleum Inspector
3. Petroleum Route Person
4. Petroleum Sales Manager
5. Petroleum Sales Person
6. Petroleum Service Manager
7. Petroleum Service Mechanic
8. Petroleum Specialist
9. Petroleum Warehouse Worker

Machinery and Equipment Cluster

1. Calibrator
2. Equipment Sales Person
3. Farm Equipment Dealer
4. Machinery Erector
5. Machinery Sales Manager
6. Machinery Service Manager
7. Machinery Supply Mechanic
8. Parts Person
9. Sales Engineer

Animal Products Cluster

1. Dairy Products Sales
2. Egg Candler
3. Field Representative
4. Market Manager
5. Meat Cutter
6. Meat Inspector
7. Meat Processing Plant Manager
8. Poultry Technician
9. Product Buyer
10. Wool Fleece Grader

Plant Products Cluster

1. Cannery Employee
2. Fiber Technician
3. Fruit and Vegetable Grower
4. Fruit and Vegetable Market Manager
5. Grain Buyer
6. Grain Elevator Manager
7. Grain Processor
8. Processing Plant Superintendent
9. Sap Collector
10. Fruit and Vegetable Grader

OCCUPATIONS IN

AGRICULTURAL PRODUCTS, SUPPLIES, SALES, AND SERVICES (CONT.)

Other Services Cluster

1. ASCS Compliance Supervisor
2. Agriculture Teacher
3. Breed Association Field Representative
4. Commodity Market Reporter
5. County Agricultural Extension Advisor
6. Product Quality Control Specialist
7. Product Researcher
8. USDA Specialist
9. Veterinary Livestock Inspector

AGRICULTURAL PRODUCTS, SUPPLIES, SALES, AND SERVICES OCCUPATIONS

JOB DESCRIPTIONS

1. I am employed in the area of Other Services.

I work with boys and girls through 4-H programs. I help adults learn better farming methods, and develop plans for community improvement. I am a link between the local people and the Cooperative Extension Service at the state land-grant college. I collect, analyze, and evaluate agricultural data and assist both rural and urban people in solving their agricultural problems.

For 100 points, what is my job?

County Agricultural Extension Advisor

2. I am employed in the area of Other Services.

A person employed in this occupation is an expert on the breed of livestock he represents, such as Hereford beef cattle or Hampshire hogs. I help the livestock producer select breeding animals and provide other services that will make the producer's operation more economical. I maintain pedigree records and register purebred animals.

For 200 points, what is my job?

Breed Association Representative

3. I am employed in the area of Plant Products.

I inspect newly picked fruits and vegetables for quality and examine storage and shipping containers. I test questionable products and reject produce which does not meet state or federal standards. I issue certificates of quality and submit inspection reports to the proper authorities.

For 100 points, what is my job?

Fruit and Vegetable Grader

4. I am employed in the area of Plant Products.

I keep a daily record of grain purchases and sales from farmers. I supervise the sale and delivery of feed or fertilizer to the farmer. At larger elevators, I supervise workers who dump grain into pits, load train cars, and grind and mix feed. The main part of my job involves providing good service to my customers, who are farmers and large grain buyers.

For 160 points, what is my job?

Grain Elevator Manager

5. I am employed in the area of Animal Products.

I prepare meat, fish, and poultry for sale in supermarkets or wholesale food outlets. I get dressed carcasses from the packing house where they have removed the head, hide, and entrails and I quarter the carcasses so they can be easily handled. In the grocery store, my job is to cut these quarters into steaks, roasts, chops, or other portions which may be bought by the consumer. I am also responsible for packaging and pricing meats, setting up attractive counter displays, and waiting on customers.

For 100 points, what is my job?

Meat Cutter

6. I am employed in the area of Machinery and Equipment.

I work with parts and supplies and often specialize in several types and makes of equipment. My duties may include selling and ordering parts, keeping inventories, stocking shelves, and making adjustments on warranties. These duties vary with the size of the business and the items that are handled.

For 40 points, what is my job?

Farm Machinery Parts Person

7. I am employed in the area of Animal Products.

I sell dairy products to grocery stores or individual families on a door-to-door route. In the store, I take orders and set up displays on counters or shelves and in refrigerated bins. I am responsible for pricing and for removing damaged or unsaleable items.

For 80 points, what is my job?

Dairy Products Sales Person

8. I am employed in the area of Machinery and Equipment.

I am hired by a farm equipment dealer or others to install, assemble, or service agricultural equipment or machinery. I must be able to read and follow instructions for the correct assembly of machinery, and to use scientific servicing equipment to determine the adjustments on new machines.

For 120 points, what is my job?

Machinery Erector or Set-up Person

9. I am employed in the area of Petroleum.

My job is to make sure that the petroleum products offered by my company are available when the consumer needs them. I arrange for the ordering and delivery of products and maintain inventory records. My duties may include loading trucks with gasoline, fuel oils, or lubricants for delivery; and cleaning and caring for the warehouse.

For 40 points, what is my job?

Agricultural Petroleum Warehouse Person

10. I am employed in the area of Petroleum.

My job is to deliver fuels, heating oil, and lubricants to farmers, home-owners, and others; and to make recommendations on the storage, handling, and use of petroleum products. I contact individuals to gain additional customers for the firm.

For 50 points, what is my job?

Agricultural Petroleum Route Person

11. I am employed in the area of Chemicals.

I kill rats, termites, crop insects, and other pests by applying chemicals or setting mechanical traps. Such pests may infest farm and business buildings, surrounding areas, or stored agricultural products. I advise building owners and others of measures to guard against infestation or reinfestation of pests.

For 90 points, what is my job?

Agricultural Pest Exterminator

12. I am employed in the area of Chemicals.

I operate an airplane or helicopter at low altitudes over agricultural land to seed fields, fertilize crops, or spray chemicals that will control pests.

For 60 points, what is my job?

Crop sprayer or Agricultural Airplane Pilot

13. I am employed in the area of Feed.

I operate equipment that prepares grain for feeding to poultry and livestock. I mix grain with other feed parts according to a given formula for delivery to the farm. I sometimes operate a truck equipped to do these jobs on the farm.

For 50 points, what is my job?

Feed Grinder

14. I am employed in the area of Feed.

I represent a company that is in competition with other feed companies in the area. My main responsibility is to provide the type of feeds and related services demanded by customers. The success or failure of the business relies heavily on the way I do my job.

For 40 points, what is my job?

Feed Sales Manager

15. I am employed in the area of Seed.

I observe the growing of seeds, inspect seed samples for disease and foreign materials, and conduct research to produce new plant varieties. The major purpose of my job is to supply the farmer with improved seed for crop production.

For 80 points, what is my job?

Seed Researcher

16. I am employed in the area of Seed.

I operate equipment that controls the temperature and humidity in drums or compartments in which seeds are placed to test their vitality. I study the structure of plants and factors associated with plant growth.

For 140 points, what is my job?

Germination Worker

17. I am employed in the area of Fertilizer.

I apply lime or fertilizer to the farmer's field using trucks or tanks. I am responsible for the mechanical adjustment, operation, and maintenance of the equipment. Mixing the fertilizer or blending herbicides for a combination application may also be part of my job.

For 60 points, what is my job?

Fertilizer Applicator Operator

18. I am employed in the area of Fertilizer.

I study soils and the characteristics of soils, identifying and mapping their types and productivity. I determine how the soil can be used best and how alternative farming methods may increase production. I advise on soil use for foundations of roads, buildings, and other structures and problems of soil and water conservation.

For 100 points, what is my job?

Soil Scientist

CHANCE CARDS

Lose lawsuit
Lose 60 points

Buy a new home
Pay 75 points

If your number was 3
Collect 100 points

If your number was 4
Collect 50 points

Lose 10 times
Number on dice

Inherit gold mine
Collect 50 points

Pay property tax
of 40 points

Give 20 points
To charity

Collect 10 times
Number on dice

Buy a new car
Pay 15 points

Find oil
Collect 75 points

Taxes
Pay 15 points

Dog bites neighbor
Lose 25 points

Uncle in jail
Pay 10 points

Big win at races
Collect 60 points

Move back
10 spaces

Careless
Lose 30 points

Advance
6 spaces

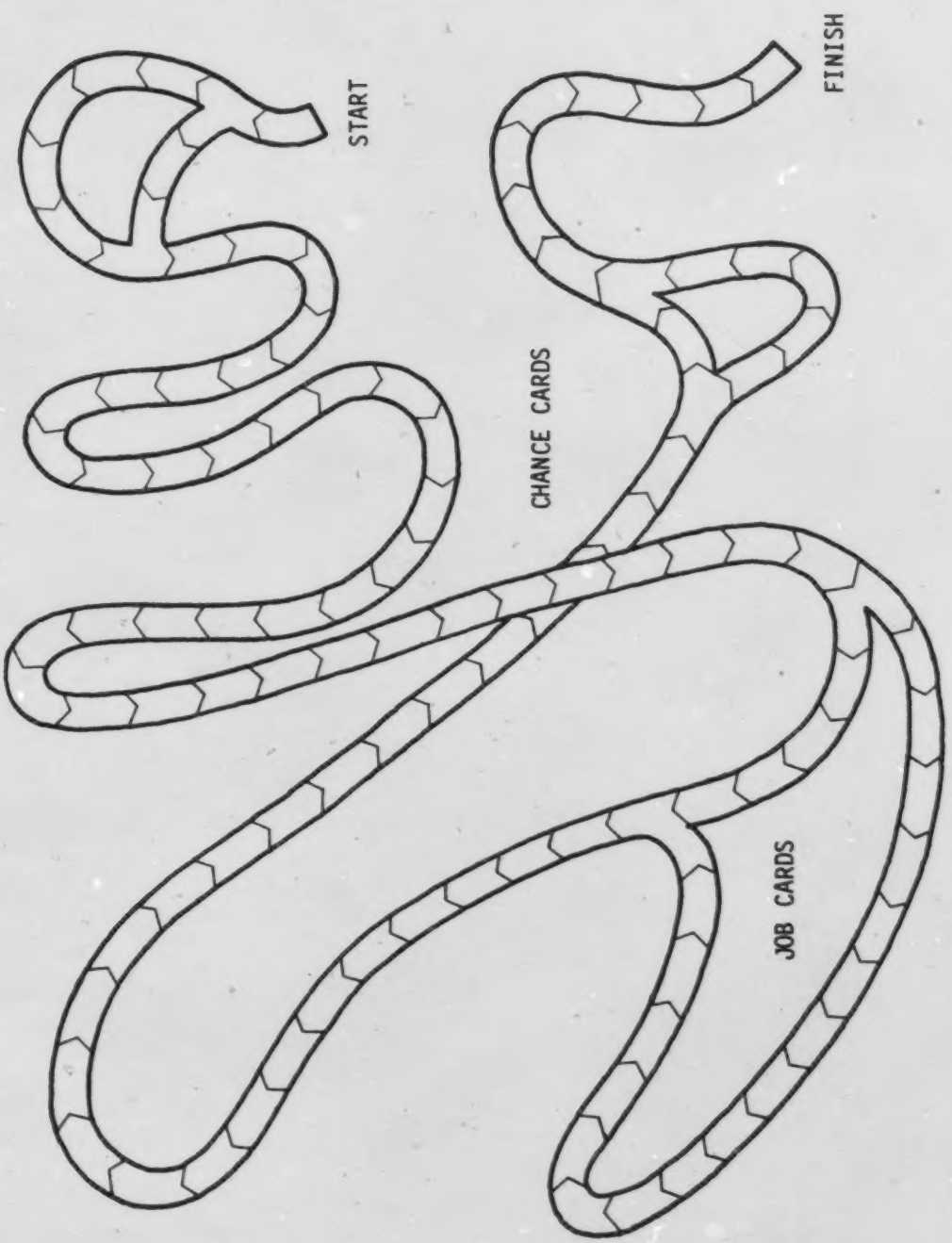
Win lottery
Collect 100 points

You have been robbed
Lose next pay check

GAME BOARD ARROWS

Pay Day	You are lost Lose a turn
Pay Day	Car breaks down Lose turn
Pay Day	Put on probation Lose turn
Pay Day	Day off--relax
Pay Day	Sick day Lose turn
Pay Day	Reckless driving Lose turn
Pay Day	Vacation day--relax
Pay Day	Tornado blows you Back to start
Pay Day	Slow start Roll again
Revenge	Happy day Go directly to finish
Revenge	Revenge
Revenge	

GAME BOARD DIAGRAM



LEARNING ACTIVITY PACKAGE 9

Category: Agricultural Products, Supplies, Sales, Services

Focus: Sales Manager

Activity: Resource Person

Objective: At the conclusion of this lesson, the student will be able to describe on a student worksheet the job duties, educational requirements, employment opportunities, and approximate salary range for a sales manager in the farm supplies business.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Looking at the job of an Agricultural Supplies Sales Manager (see sample included in the back of this notebook).

2. Resource Person Information Sheet (see sample included in the back of this notebook).

RATIONALE

The purpose of this activity is to expose the student to careers in the agricultural sales and services field. It provides the student with an opportunity to meet and talk with someone dealing directly with these jobs and to gain information and exposure not normally available from the classroom.

SUGGESTED PROCEDURE

Contact your resource person well in advance of the actual visit. The resource person should be aware of the objective of the talk and the manner in which you wish to have the lesson conducted. Suggest that the person bring along some slides of the work or some other visual materials which he/she can use in the presentation.

At least 10 minutes should be allowed at the end of the period for student discussion and interaction with the resource person.

If a sales manager is not available in your area you may choose a person from the following occupations: feed sales manager, fertilizer sales representative, or petroleum sales person.

LEARNING ACTIVITY PACKAGE 10

Category: Agricultural Products, Supplies, Sales, and Services

Focus: Occupations in Meat Processing

Activity: Class Presentations

Objective: At the conclusion of this lesson, the student will be able to name occupations in meat processing and demonstrate a knowledge of these occupations by orally presenting to the class the skills, history, and activities of people employed in meat processing.

EQUIPMENT, SUPPLIES, AND FORMS

1. List of possible small-group or individual activities which can be used for project (see sample enclosed in this learning package).
2. Meat Hygiene, Brandly, Migaki, and Taylor; Lea and Febinger, 600 South Washington Square, Philadelphia, PA 19106 (1966).
3. The Meat Handbook, Levie; A.V.I. Publishing Company, Box 670, Westport, CT 06880 (1970).
4. Poultry Products Technology, Mountrey; A.V.I. Publishing Company, Box 670, Westport, CT 06880.
5. Industrial Fishery Technology, Stansby; Van Nostrand, Reinhold Company, 450 West 33rd Street, New York, NY 10001 (1963).
6. The Meat We Eat, Romand and Ziegler; Interstate Printers and Publishers, Inc., Danville, IL 61832 (1974).

RATIONALE

The purpose of this lesson is to make the students aware of the occupational opportunities in meat processing.

SUGGESTED PROCEDURE

This lesson needs to be introduced at least a week before the students give their presentations. A week's notice gives them the opportunity to develop and practice their presentations.

The students are given the option of working individually or in small groups. They will be asked to select one of the possible activities from the list of 12 supplied with this lesson. They are then asked to develop that activity into a five- to ten-minute class presentation, to be given a week later.

ALTERNATE ACTIVITIES

Filmstrip and cassette tape, The Meat Cutter, available from Society for Visual Education, Inc., 1345 Diversey Parkway, Chicago, IL 60614.

POSSIBLE STUDENT PROJECTS

1. Prepare charts which identify the carcass location of various cuts of meat. Identify the occupational difference between a slaughterer and a butcher.
2. Prepare a map showing beef, swine, sheep, and other animal producers in the U.S. Locate the major packing houses. Outline the process for moving the animal from the producer to the packing house to the customer.
3. Prepare a report with pictures showing the use of animal parts which are not used for human food. What happens to the animal hides, tail, and squeal?
4. Display pictures of several ways meat is processed and packaged, i.e., frozen, canned, fresh, smoked. For each picture, prepare statements as to why each method is chosen.
5. Compare the methods used 50 years ago with those used today in processing poultry, fish, beef, swine, or sheep.
6. Research the history of meat processing. Is the geographical location of this industry changing? Why? Is the need for meat-packing workers decreasing? Why? What are the trends in the industry?
7. Find out and report to the class the health standards which must be met by meat, poultry, and fish packers. What is the purpose of inspecting meats? What does the label "USDA" mean on a side of beef?
8. List as many of the by-products of the meat packing industry as possible. What is the importance of these by-products to the industry?
9. Investigate possible ingredients of a meat product such as bologna. What are some differences between brands? Which products give the most protein for the money?
10. Prepare a chart showing the definitions of various grades of meat.
11. Visit a kosher butcher shop, a Chinese market, or any food specialty shop to gain some firsthand information. Are there special ways of slaughtering and butchering meats or processing other foods for certain cultural or religious groups?
12. Select one of the meat-processing occupations suggested and research it, interviewing someone in this area. Gather the following information from the interviewee and any reference material available:
    a. special skills and aptitudes
    b. educational requirements
    c. working conditions
    d. employment possibilities
    e. attitudes and values necessary to obtain, hold, and advance in career selected
    f. qualities necessary to be a productive worker

LEARNING ACTIVITY PACKAGE 11

Category: Agricultural Products, Supplies, Sales, and Services

Focus: Agribusiness Occupations in Advertising and Marketing

Activity: Making a Commercial

Objective: At the conclusion of this lesson, the student will be able to demonstrate, by developing and presenting a commercial, some of the skills and duties found in agribusiness advertising and marketing occupations.

EQUIPMENT, SUPPLIES, AND FORMS

1. List of popular advertising slogans for farm products.
2. Advertising from newspapers and magazines for popular farm equipment and products.
3. Student worksheet: Occupations in Advertising and Marketing (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to make students aware of some of the skills and occupational opportunities in the advertising, marketing, communicating and selling of new agricultural products.

SUGGESTED PROCEDURE

Due to the nature of this lesson, there needs to be at least a one week break between the introduction of this lesson and the actual presentations of the students' commercials.

The students are asked to play the role of several different people. They are asked to take on the responsibilities and job duties of those people involved in developing, packaging, advertising, and selling new agricultural-related products, supplies, or services.

The students are given the option of working with a partner or individually. Their task is to:

1. Think up an imaginary, or improve on an existing, agricultural-related product, supply, or service.
2. Name this new product or supply.
3. Package it.
4. Establish a selling price or rate for the services rendered.
5. Develop sales or advertising promotions (i.e., gimmicks, slogans, charts, etc.).
6. Present this information to the class in the form of a commercial.

The introduction to this lesson should stress the importance of good advertising in selling a new product. To assist the students in developing their own advertising program, the worksheet on the following page lists several well-known products and advertising slogans.

If the equipment and facilities are available to you, videotape the students' commercials. This adds greatly to the students' enthusiasm, gives them an opportunity to watch themselves present a commercial, and subsequently helps them to improve on individual appearance and delivery.

AGRIBUSINESS

OCCUPATIONS IN

ADVERTISING and

MARKETING

PART I

Listed below are several well-known advertising slogans. See if you can name the product or business for each slogan.

1. TRY THE UN-COLA
2. YOU DESERVE A BREAK TODAY
3. MUNCH-A-BUNCH
4. IT'S FINGER LICK'EN GOOD
5. DOUBLE YOUR PLEASURE, DOUBLE YOUR FUN
6. I CAN'T BELIEVE I ATE THE WHOLE THING
7. COME TO THE SIGN OF THE CAT
8. IT MELTS IN YOUR MOUTH, NOT IN YOUR HAND
9. IT'S THE REAL THING
10. LET THE GOOD TIMES ROLL

PART II

Listed below are several well-known products or businesses. See if you can think of the common advertising slogan which represents each of the products or businesses.

1. ALPO DOG FOOD
2. T.W.A. AIRLINES
3. FORD
4. CLAIROL
5. MINUTE-MAID ORANGE JUICE
6. FOLGER'S COFFEE
7. SUGAR FROSTED FLAKES
8. PEPSI
9. IVORY SOAP
10. NESTEA

LEARNING ACTIVITY PACKAGE 12

Category: Natural Resources, Forestry, and Environmental Control

Focus: Identification of Jobs in Natural Resources, Forestry, and Environmental Control

Activity: Job Identification Game

Objective: At the conclusion of this lesson, the student will be able to demonstrate a knowledge of seven specific job titles in the field of natural resources, forestry, and environmental control by matching job titles and descriptions.

EQUIPMENT, SUPPLIES, AND FORMS

1. Copy of the game rules for Who Am I? (see sample enclosed in this learning package).
2. List of job titles from the field of natural resources, forestry, and environmental control (see sample enclosed in this learning package).
3. Twenty job descriptions, the matching job titles, the field in which they are found, and their respective point values. All of these are found below and are to be pasted or taped to 4" x 6" index cards.
4. List of job descriptions (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students a summary of the occupations found within the field of natural resources, forestry, and environmental control.

SUGGESTED PROCEDURE

Allow a little extra time to prepare the game cards for this lesson.

MAKING THE GAME CARDS

This game uses 20 sets of two-card units. The materials to make these cards are printed on the following pages. You should make as many copies of these pages as you need so all the students in your class can play the game at one time. (Also make extra copies of the list of jobs below.)

Make the first card of the two-card unit by taping or pasting each job description (see below) on a 4" x 6" index card. Then put the specific job title for that description (see below) on the opposite side of the card.

The second card of each unit has the general field and point value for each job on the first card. Affix this general field name and point value (see below) to one side of a 4" x 6" card. (This second card was developed to assist the student in reducing the number of job titles which could match the job description.)

To assemble the units, place the second card (with the side with the general field and point value on it face up) for each job on top of the first card for each, covering the job title. Tape the top edges of the cards together. The job title is now hidden between the two cards.

For directions on how to play the game, see below.

WHO AM I?

HOW TO PLAY THE GAME

To play the game, all 20 sets of cards are spread out across a table top with the point values and general field listing face up, and the job descriptions face down. Divide the class into two teams. The first player from one of the teams selects a card, reads the general field from which the job is listed, then turns the card over to read aloud the abbreviated job description. After reading the description and referring to the list of specific job titles, the player gives the answer of which job title matches the description. The scorekeeper lifts the card and reads the correct answer. If the player answers correctly the proper number of points is awarded to the team. However, if the player misses the question, the proper number of points is subtracted from the team's total. The team with the highest number of points wins.

OCCUPATIONS IN

NATURAL RESOURCES, FORESTRY, AND ENVIRONMENTAL CONTROL

Forest Conservation Cluster

1. Airplane Pilot Conservation Officer
2. Fire Lookout
3. Fire Patrolman
4. Fire Warden
5. Forestry Aide
6. Forest Fire Fighter
7. Jumpmaster
8. Sprayer
9. Suppression Crew Leader
10. Tree Planter
11. Tree Pruner

Park and Recreation Cluster

1. Camp Ground Caretaker
2. Fish and Game Warden
3. Groundskeeper
4. Park Caretaker
5. Park Foreman
6. Park Naturalist
7. Park Patrol Officer
8. Park Ranger
9. Park Superintendent
10. Wildlife Conservationist
11. Park Worker

Forest Products Cluster

1. Bough Cutter
2. Box Cutter
3. Cupper and Tinner
4. Face Cutter
5. Gatherer
6. Greens Picker
7. Greens Tier
8. Wreath Inspector
9. District Manager
10. Moss Picker
11. Moss Handler
12. Moss Cutter
13. Sap Collector
14. Sugar Tapper
15. Woods Boss
16. Woods Rider

OCCUPATIONS IN

NATURAL RESOURCES, FORESTRY AND ENVIRONMENTAL CONTROL (CONT.)

Soil and Water Conservation Cluster

1. Industrial Waste Inspector
2. Range Manager
3. Range Supervisor
4. Soil Conservation Aide
5. Soil Conservationist
6. Soil Scientist
7. Water Control Specialist

Hunting and Trapping Cluster

1. Game Keeper
2. Guide
3. Hunter
4. Predatory Animal Hunter
5. Trapper
6. Walrus Hunter

Education and Research for Animals, Plants, and Insects

1. Aquatic Biologist
2. Entomologist
3. Fish Culturist
4. Fishery Bacteriologist
5. Plant Ecologist
6. Plant Pathologist
7. Plant Taxonomist

Wood Utilization Cluster

1. Christmas Tree Farmer
2. Field Worker
3. Pulpwood Buyer
4. Pulpwood Contractor
5. Pulpwood Grower
6. Woods Boss
7. Yard Worker

Education and Research for Forestry

1. Forest Engineer
2. Forest Ecologist
3. Forester
4. Wood Technologist
5. Wood Chemist

OCCUPATIONS IN

NATURAL RESOURCES, FORESTRY, AND ENVIRONMENTAL CONTROL (CONT.)

Timber Cutting Cluster

1. Bark Fitter
2. Bucker
3. Head Bucker
4. Cedar Post Cutter
5. Cordwood Cutter
6. Faller
7. High Climber
8. Logger
9. Piece Maker
10. Limber
11. Post Cutter
12. River
13. Timber Boss
14. Timber Marker
15. Woods Boss

Log Inspecting, Grading, and Related Occupations

1. Boom Operator
2. Chief Cruiser
3. Cruiser
4. Field Worker
5. Foreman, Logging
6. Log Brander
7. Log Buyer
8. Log Grader
9. Logging Contractor
10. Log Scaler
11. Picker
12. Scaler, Wood
13. Tie Inspector

Other Logging Occupations

1. Buck Swamper
2. Bush Monkey
3. Gate Tender
4. Hewer
5. Horse Inspector
6. Logging Instructor
7. Road Maker
8. Sticker Worker
9. Swamper
10. Whistle Punk

OCCUPATIONS IN

NATURAL RESOURCES, FORESTRY, AND ENVIRONMENTAL CONTROL (CONT.)

Log Sorting, Gathering, and Storing

1. Bolt Loader
2. Boom Supervisor
3. Choke Operator
4. Chaser
5. Deck Worker
6. Donkey Engineer
7. Hook Tender
8. Jammer Boss
9. Loader, Head
10. Loader Helper
11. Log Driver
12. Log Haul Operator
13. Log Loader
14. Log Marker
15. Peeler
16. Pulp Piler
17. Plug Setter
18. Rafter
19. Rigger
20. Rigging Slinger
21. Slide Line Worker
22. Sled Tender
23. Winch-truck Operator

NATURAL RESOURCES, FORESTRY, AND ENVIRONMENTAL CONTROL OCCUPATIONS

JOB DESCRIPTION CARDS

1. I direct the feeding of fish and regulate the temperature of indoor tanks. I direct the sorting of fish and fingerlings according to size, coloring, and species and oversee the transfer of these fish to proper tanks for spawning and growth increase. I am also in charge of counting and sorting fish for delivery to farm ponds, streams, and rivers.

Fish Biologist or Fish Culturist

2. I check the operation and maintenance of pumps, pipes, and valves that connect the waste-collection system to the treatment facility. My job includes inspecting the screening device operations for the removal of solid waste from wastewater and taking test water samples for the adjustment of chlorine in the water. The reports of my work are used to determine health and environmental hazards as well as factory efficiency.

Industrial Waste Inspector

3. I survey forest lands to determine the quantity of timber that can be harvested, noting tree quality, age of stand, and composition of the species. My management plans, logging plans, timber purchases, and sales are based on data I have gathered. I often have to travel over rugged terrain to gather this data. The results of my work are also used to develop topographic maps that show land contours.

Cruiser or Chief Cruiser

4. I conduct research in the fields of timber quality, wood quality, wood anatomy, wood processing, and residue utilization. I make scientific studies aimed at promoting the usefulness and value of wood and developing or improving wood and wood-based products. My work spans the entire field of wood production, primary and secondary manufacture, and public use of wood.

Wood Technologist

5. I manage, develop, and protect forest lands and their resources, such as timber, water, wildlife, forage, and recreational areas. I plan and supervise tree harvesting, marketing, and reforestation operations. I implement practices to safeguard forests from fires, insects, and diseases. I am responsible for wildlife protection, management of watersheds, camps, parks, and pasture lands.

Forester

6. My job involves observing, locating, and reporting forest fires from a remote station to the base camp by radio or telephone. I inform the nearby public through newspapers, radio, and television about fire prevention programs, timber company policies, regulations, and fire hazard conditions. I keep records, operate a radio, fire-finding instruments, meteorological instruments, and report weather conditions.

Fire Lookout

7. I engage in gathering special forest products such as salal, ferns, huckleberry, and other forest products according to the buyer's specifications and deliver them to wholesalers. Depending on the season of the year, I may also be a seed cone picker, a tree planter, or a Christmas tree cutter. My work is done outdoors. I travel to distant forests searching for greens and other forest products.

Greens Picker

8. I study the nature, development, cause, and control of plant diseases and the effect of these diseases on the decay of plant products. I may specialize in working with diseases that attack cereal grains, growing fruits, or trees. I also do research to discover the specific cause, bacteria, virus, or fungus, of the disease.

Plant Pathologist

9. I help professional soil conservationists make conservation plans. Using a transit I help to lay out contours and transfer data to survey maps. I help explain and demonstrate different conservation practices to farmers and ranchers. I perform the routine activities of the professional conservationist (such as collecting soil samples), freeing him/her to perform the jobs requiring professional knowledge and skill.

Soil Conservation Aide

10. I study plants and animals living in water and the environmental conditions which affect them. I examine the effects of temperature, light, acidity, and oxygen content on aquatic plants and animals. I study and learn about the habits of various types of water life like snails, plankton, fish, clams, and others. If I specialize in the study of saltwater aquatic life, I am called a marine "_____." If work with freshwater aquatic life, I am a limnologist.

Aquatic Biologist

11. I assist professional foresters in managing and caring for forested areas. We estimate the growth, amount, and value of timber in a forest; mark timber for harvest; prune trees to improve the quality of timber; spray trees with pesticides to protect them from insects and diseases; and collect information on the condition of watershed areas. We also conduct road surveys, maintain forest trails, and perform other related duties.

Forestry Aide

12. I am primarily concerned with the protection and management of sport fish and game animals. I enforce fish and game regulations, investigate violations, issue warrants, make arrests, and provide evidence in court. I provide the public with information on the availability of game, hunting and fishing regulations, and the conditions of fish and wildlife. To perform my duties, I travel on foot, or by car, boat, or sometimes airplane.

Fish and Game Warden

13. I keep city, state, municipal, or national park grounds clean, maintain buildings, and repair equipment. Specifically, my job entails mowing lawns, controlling weeds, caring for flowers, and trimming hedges. I also pick up and dispose of litter.

Park Worker

14. I am responsible for the management, development, and protection of rangelands and related resources. I establish systems and plans for using rangeland for livestock production while conserving the soil and vegetation necessary for wildlife grazing, public recreation, growth of timber, and water run-off prevention. I evaluate forage resources and decide on the number and appropriate type of livestock to be grazed and the best time to graze and determine other range conservation practices. I engage in fire protection, pest control, and trespasser control. In addition, I conduct experiments in range management and publicize the results of the experiments.

Range Manager

15. I study insects and their effect on farming and related enterprises. Those that attack plants and animals are given special consideration. My job is concerned with the identification and classification of insects, both beneficial and harmful. I develop or discover ways of controlling insect pests and encourage the multiplication of beneficial insects, such as bees and those used as food by birds and fish. I study the habitat and distribution of insects and may recommend ways of preventing the importation of injurious ones into the country.

Entomologist

16. I study the physical, chemical, and biological characteristics and behavior of soils. My work and research find the answers to management questions concerning the soil's capability to produce crops, grasses, and trees, and the soil's ability to be used as a foundation for buildings. I prepare maps based on aerial photographs, on which I plot the individual kinds of soil and other landscape features. My work is used to predict yields of crops, grasses, and trees.

Soil Scientist

17. I have a variety of duties such as research, propagation, distribution, control, protection, and management of sport fish and game animals. I patrol assigned areas to enforce fish and game laws by checking licenses of hunters and fishermen. I check boat safety equipment, state registration, and investigate reports of damage to crops by wildlife. I perform my duties in all kinds of weather conditions, day or night.

Wildlife Conservationist

18. I interpret laws and regulations giving information to sportsmen, landowners, and the general public. I manage wild game and/or released game in my work as a laborer, deputy, game protector, or in one of several other classified positions. I may be an employee of the U.S. Fish and Wildlife Service, a state game commission, or a private hunting club.

Game Keeper

19. I cut down trees either alone or as a member of a work crew. I determine the direction to fell the tree in order to make skidding easier, to minimize danger to fellow workers, and to prevent damage to other trees. I often remove snags or fall saplings in the path of the tree fall to prevent throwback and cut limbs from the fallen tree. Sometimes, I cut the tree into log lengths if a tree bucker is not available.

Faller

20. I investigate ways of preventing soil erosion. I plan and develop practices to prevent soil erosion, conserve moisture, and use land in the best way. I work in cooperation with farmers and ranchers to select the best use for land and to identify and use approved farming practices. I provide assistance to ranchers and farmers in the application of such practices as terracing and grassed waterways. In performing my job I apply many principles of agricultural science from specialized fields such as agronomy, soil science, and forestry to achieve good soil conservation.

Soil Conservationist

GENERAL FIELD AND POINT VALUE CARDS

Note: These items are keyed to the number of the job description (on the job description cards). Do not put the key number, but only the field name and point value, on each card.

For #1:

Education and Research for Animals, Plants, and Insects
For 5 points, who am I?

For #2:

Soil and Water Conservation Cluster
For 5 points, who am I?

For #3:

Log Inspecting, Grading, and Related Occupations
For 10 points, who am I?

For #4:

Education and Research for Forestry
For 10 points, who am I?

For #5:

Education and Research for Forestry
For 5 points, who am I?

For #6:

Forest Conservation Cluster
For 3 points, who am I?

For #7:

Forest Products Cluster
For 3 points, who am I?

GENERAL FIELD AND POINT VALUE CARDS (CONT.)

For #8:

Education and Research for Animals, Plants, and Insects
For 5 points, who am I?

For #9:

Soil and Water Conservation Cluster
For 3 points, who am I?

For #10:

Education and Research for Animals, Plants, and Insects
For 10 points, who am I?

For #11:

Forest Conservation Cluster
For 5 points, who am I?

For #12:

Park and Recreation Cluster
For 3 points, who am I?

For #13:

Park and Recreation Cluster
For 3 points, who am I?

For #14:

Soil and Water Conservation Cluster
For 10 points, who am I?

For #15:

Education and Research for Animals, Plants, and Insects
For 10 points, who am I?

GENERAL FIELD AND POINT VALUE CARDS (CONT.)

For #16:

Soil and Water Conservation Cluster
For 10 points, who am I?

For #17:

Park and Recreation Cluster
For 5 points, who am I?

For #18:

Hunting and Trapping Cluster
For 3 points, who am I?

For #19:

Timber Cutting Cluster
For 3 points, who am I?

For #20:

Soil and Water Conservation Cluster
For 5 points, who am I?

LEARNING ACTIVITY PACKAGE 13

Category: Natural Resources, Forestry, and Environmental Control

Focus: Ecologist and Conservationist

Activity: Film and Discussion

Objective: At the conclusion of this lesson, the student will be able to demonstrate, by participating in a class discussion, an awareness of the duties and responsibilities of an ecologist, and an awareness of future job trends in the field of ecology and conservation.

EQUIPMENT, SUPPLIES, AND FORMS

1. 16 mm film, What Ecologists Do, available from Centron Educational Films, 1621 West 9th Street, Lawrence, KS 66044.

RATIONALE

The purpose of this lesson is to introduce students to the occupational field of ecology and conservation and give them a realistic view of future job trends in this field.

SUGGESTED PROCEDURE

Many of the jobs in the field of ecology and conservation are government related. Local, state, and federal governments are the major employers of ecologists and conservationists. As governmental programs are cut back or abolished, so are the positions available within the field. Students should be made aware of this fact.

Begin the class by introducing the film What Ecologists Do. Remind students that they should be looking and listening for key points during the film. For example, "What is an ecologist?"; or "What are some of the duties and responsibilities of an ecologist?"; and "How do you go about becoming an ecologist?" After the film, lead a class discussion of the following questions:

1. What is the science of ecology?
2. Why is there an increasing concern today about our environment?
3. What is pollution?
4. How does an ecologist maintain and protect our environment?
5. Who hires ecologists?
6. What are their duties?

ALTERNATE ACTIVITIES

1. Collect samples of water from different sources such as lakes, rivers, streams, ponds, and faucets at home or school. Examine each sample for noticeable particles of pollution, sediment, cloudiness in color, clarity, etc. Try to draw conclusions as to the effect of pollution in the water on plants and animals.
2. The class can do experiments in water pollution control. Arrange simple experiments with filtering of polluted water. You can use sand, rock, etc., as filtering materials.
3. Survey an area on the school grounds or the nearby neighborhood that is suffering from the effects of erosion; have the class plan a course of action for remedying the situation. The students may want to carry this farther and organize into teams to go out and work on correcting the problems.

LEARNING ACTIVITY PACKAGE 14

Category: Natural Resources, Forestry, and Environmental Control

Focus: Forester

Activity: Resource Person

Objective: At the conclusion of this lesson, the student will be able to list and describe on a student worksheet, information about some of the basic duties, average working conditions, educational requirements, employment opportunities, and salary ranges of a forester.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Is Forestry an Occupation for You? (See sample included in the back of this notebook.)
2. 16 mm film, entitled Foresters, available from Centron Educational Films, 1621 West 9th Street, Lawrence, KS 66044.
3. Forestry As a Career, bulletin published by Department of Conservation, Division of Forestry, 605 State Office Building, Springfield, IL 62706.
4. Resource Person Information Sheet (see sample included in the back of this notebook).

RATIONALE

The purpose of this activity is to expose the students to careers in the forestry field. It provides students with an opportunity to meet and talk with someone dealing directly with the job and to gain information and exposure not normally available from the classroom.

SUGGESTED PROCEDURE

Contact your resource person well in advance of the actual visit. This will allow adequate time for preparation of the presentation. The resource person should be aware of the lesson's objective and the manner in which you wish the lesson to be conducted. Suggest that some of the tools of the profession and audiovisual materials be used to help the students become better acquainted with the occupation. A supporting film is listed at the beginning of this lesson.

If a forester is not available as a resource person in your area, you may select one of these resource people: Christmas tree farmer, environmental protection specialist, nursery manager, county agricultural extension advisor, USDA specialist, or a conservation officer.

If there are no resource people available to you, you may wish to use the information bulleting provided by the Department of Forestry. It is entitled Forestry As a Career, and discusses most of the points listed in this lesson's objective.

ALTERNATE ACTIVITIES

1. Do an activity on branch or plant grafting. Allow time for the students to experiment and to try to do some of the different types of grafting on plants and branches. To do this activity you will need a selection of branches from different plants; students can bring these to school. For reference, see: R.J. Garner, The Grafter's Handbook, New York, Oxford University Press (1958).
2. If a park or forest preserve is located nearby, do an activity on methods of selecting trees to be eliminated in the selective cutting of a forest area.
3. Organize an activity dealing with the prevention of erosion by the use of tree plantings. In this type of activity the students could do erosion control plantings around the school or the neighborhood. Many farmers or local parks provide trees for an activity of this type, if they have people to do the planting.
4. Use the "Listen to Learn" cassette series, Forestry Careers, Eye Gate House, 146-01 Archer Avenue, Jamaica, NY 11435.

LEARNING ACTIVITY PACKAGE 15

Category: Natural Resources, Forestry, and Environmental Control

Focus: Forestry Occupations

Activity: Calculating Height and Board Feet of Lumber in a Tree

Objective: At the conclusion of this lesson, the student will be familiar with at least two skills involved in forestry: measuring the approximate height and board feet of lumber of a tree.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Measuring in Forestry (see sample enclosed in this learning package).
2. Yardstick or meterstick.
3. Trees found on or near school campus.

RATIONALE

The purpose of this lesson is to give students experience performing two skills which are common to forestry occupations.

SUGGESTED PROCEDURE

It is suggested that two days be used for this lesson, one for the explanation and the recording of data, and another for mathematical calculations and class discussion.

Calculating the height of a tree is something many students may have done; however, it is something that most students have forgotten. You will probably have to explain every step.

Determining the approximate number of board feet in a tree is something most students have never done. It may be helpful to obtain from the school workshop one board foot of lumber (12" x 12" x 1").

The students should be aware that the total board feet of lumber is a measure of the usable volume of wood. Even when the tree narrows at the top to less than 12" diameter, the wood is still usable and included in the total. When the trunk diameter narrows to 4" or less, it is no longer considered usable lumber.

If you wish to include value in the calculation you might call a local lumber yard and ask the price of one board foot of lumber for several different types of wood.

An explanation of how to figure the approximate height of the tree and to determine board feet is provided on the student worksheets.

MEASURING IN FORESTRY

FINDING THE TOTAL BOARD FEET OF LUMBER IN A TREE

Trees are naturally tapered. They are widest at the bottom and narrowest at the top. To determine the approximate board feet of lumber in a tree, we need to know the average diameter of the tree. You can find this number by adding the widest part (width of the stump) to the narrowest part (this will be 4", because 4" is the cut off point for usable wood at the top of the tree) and dividing these two numbers by 2. After you know the average width or average diameter, the rest of the calculations are like a geometry problem. You are actually finding the volume of a cylinder. The only difference now is that this time the cylinder is the tree! Once you know the volume, divide it by 12 to find the number of board feet of lumber. Here are the formulas you will need to use:

$$\text{average diameter} = \frac{(\text{width of stump}) + (4 \text{ inches})}{2}$$

$$\text{area of base} = \pi\left(\tfrac{1}{2} \text{ average diameter}\right)^2 \quad (\pi = 3.14)$$

$$\text{area of base} = 3.14 \times \underline{\qquad\qquad}^2$$

$$\text{area of base} = \underline{\qquad\qquad}$$

$$\text{Total Board Feet of Lumber in a Tree} = \frac{\text{area of base of tree} \times \text{height of tree}}{12}$$

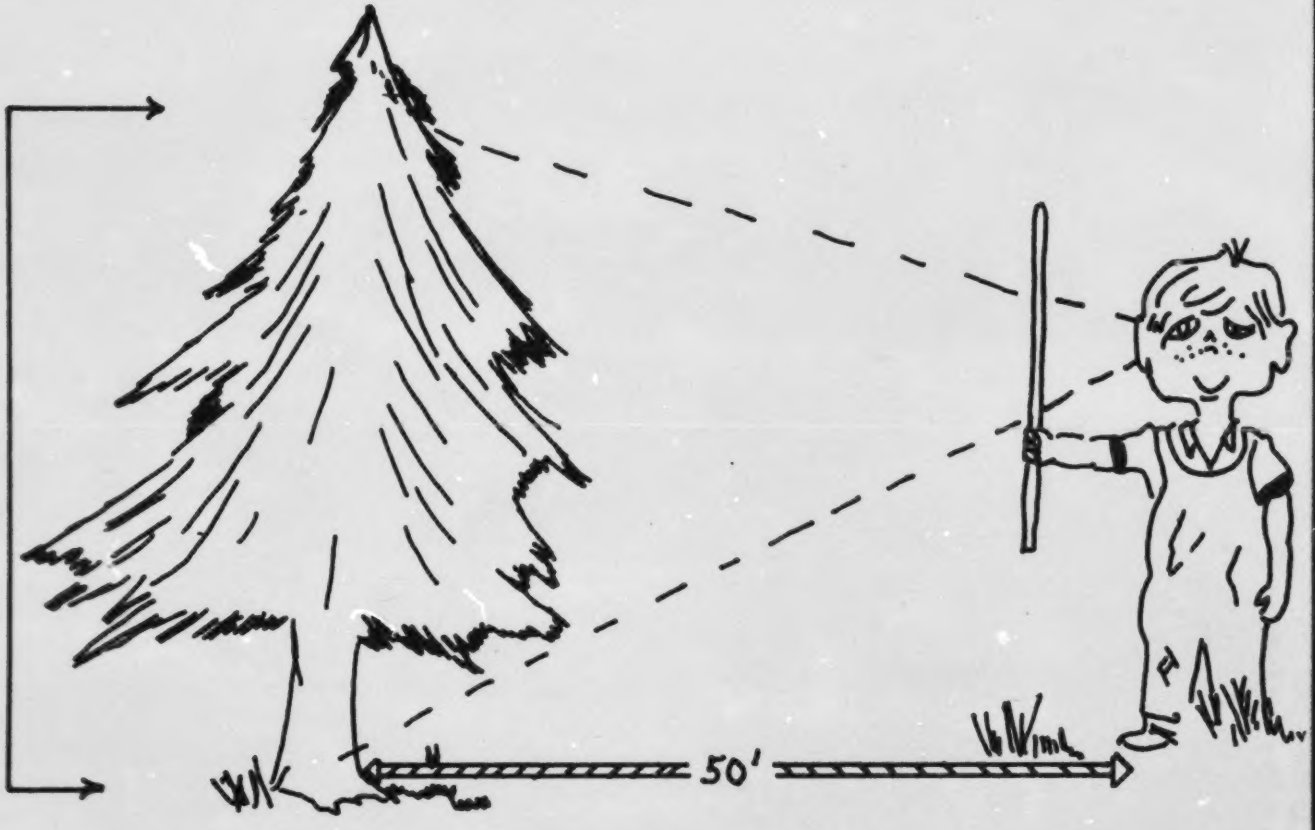
$$\text{Board Feet} = \frac{\underline{\qquad\qquad} \times \underline{\qquad\qquad}}{12}$$

$$\text{Board Feet} = \underline{\qquad\qquad}$$

MEASURING IN FORESTRY

FINDING THE HEIGHT OF A TREE

To find the approximate height of a tree, take a yardstick and step off a distance of 50 feet from the base of a tree. Hold the yardstick vertically, about 2 feet (24 inches) from your eyes. Close one eye and visually line up the zero end of the yardstick with the stump height. Then, holding steady, sight to the top of the usable tree height (that's the point where the diameter of the trunk is 4 inches or less). Where the line of vision intersects with the yardstick, record the length on the correct space below.



Use this equation, to find the height of the tree:

$$\frac{\text{length in inches from yardstock}}{\text{arm's length (24 inches)}} = \frac{\text{height of tree in inches}}{\text{distance from tree (600 inches)}}$$

$$\frac{\qquad\qquad}{\qquad\qquad} = \frac{\qquad\qquad}{\qquad\qquad}$$

LEARNING ACTIVITY PACKAGE 16

Category: Natural Resources, Forestry, and Environmental Control

Focus: Wildlife Conservationist

Activity: Field Trip: Local Park

Objective: At the conclusion of this lesson, the student will have performed a few of the basic duties of, and be able to identify (using a student worksheet), some of the responsibilities, educational requirements, and approximate salary ranges of a conservationist.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Looking at a Career in Wildlife Conservation (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose the students to careers in the area of wildlife conservation. It provides students with an opportunity to meet and talk with someone dealing directly with the job and to gain information and experience not normally available from the classroom.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. Such things as transportation and parental permission slips are best handled several days before the actual trip. The people who will be talking with the students should be aware of the objective of the lesson, and they should be given a list of questions which students are likely to ask.

Ask if some of your students could assist in one of the duties of a conservationist (e.g., bird tagging, taking water samples, collecting specimens, etc.). This type of student involvement increases student enthusiasm tremendously.

On the day of the trip, before you leave the building, remind all the students of what information they should be looking for, as stated in the objective of this lesson.

If such a resource person or facility is not available to you in your area, choose a substitute from these alternate job titles: park naturalist, fish and game warden, park ranger, or game keeper.

LEARNING ACTIVITY PACKAGE 17

Category: Natural Resources, Forestry, and Environmental Control

Focus: Recreation Occupations

Activity: Planning Campsites and Recreational Centers

Objective: At the conclusion of this lesson, the student will be able to demonstrate through classroom participation knowledge of at least one income-producing recreational use of farm land.

EQUIPMENT, SUPPLIES, AND FORMS

1. List of possible small group or individual activities for investigating occupations in recreation (see sample enclosed in this learning package).

2. Brochures from dude ranches, camping grounds, gun clubs, guest ranches, etc.

RATIONALE

The purpose of this lesson is to introduce students to a rapidly expanding area of agricultural land use - recreation.

SUGGESTED PROCEDURE

As population increases, people become more and more willing to pay to get away from the cities. The demand for outdoor recreation is expected to triple by the year 2000. Hiking, water skiing, camping, sightseeing, boating, and swimming are expected to show the largest increases.

You might begin this lesson by asking the students to name recreational activities possible on a farm and list them on the chalkboard. The following is a list of possible kinds of recreation on farm land.

1. dude ranches
2. vacation ranches (opportunity to live and work on a farm)
3. horseback riding, hayrides, rodeos, and other activities for vacationers
4. picnic and sports area (swimming and boating)
5. camping areas
6. hunting areas (need at least 200 acres)
7. shooting clubs (trap, skeet, and rifle ranches)
8. cottage and recreation sites (access rights to lakes, etc.)
9. farm animal zoo (for people who want to introduce their children to farm animals)
10. sightseeing
11. relaxation and privacy

After you have discussed the increasing importance of recreational facilities and their ability to produce an income, ask the students to select one of the small group or individual activities.

Allow the students to exchange ideas and work on their project for the remainder of the period. If time permits, you might ask them to explain the projects to the class.

POSSIBLE STUDENT PROJECTS

1. Obtain a map of the town, county, or township and locate all of the recreational areas.
2. Plan a new recreational area in the county.
   a. What natural areas will be developed?
   b. What buildings will be needed?
   c. What sports equipment will make the park more functional for adults and children?
   d. Why is the area selected a better area than any others that could have been suggested?
   e. Make a scale drawing of the proposal. Indicate streets or highways, paths or trails, water areas, and major structures.
   f. Prepare a list of persons needed to operate the park.
   g. Estimate the cost of the project.
3. Prepare a guide brochure for prospective hunters and fishers.
4. Make a scale drawing of an imaginary campground area. Include both permanent and temporary structures, as well as the landscaping needed to make the area attractive.
5. Design a roadside park. Indicate roads, buildings, and landscape features.
6. Prepare a talk to give to the class (record it on a cassette tape if desired) which would explain the value of particular plants to the local area. Some of those plants should be displayed in a terrarium.
7. Select an historic spot in the area. Research it and present an illustrated talk about it. Use photographs, drawings, models, and maps which would be helpful to the tourists visiting this area.
8. Get samples of camping permits and fishing and hunting license forms. Duplicate them and have the class fill them out. Be sure to include a list of rules and regulations.
9. Prepare a report about the recreational uses of forests, the history of the park services, the importance of forests to the total environment, and future trends for uses of forest land.
10. Color a map of the United States locating the national parks, and tell about the types of recreational facilities found in each. If possible, obtain pictures of the parks to show the class.

LEARNING ACTIVITY PACKAGE 18

Category: Ornamental Horticulture

Focus: Overview of Ornamental Horticulture Operations

Activity: Discussion and Filmstrip

Objective: At the conclusion of this lesson, the student will be able to demonstrate an awareness of the occupations in the field of ornamental horticulture by listing on a student worksheet at least 15 job titles from this field.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: What is Ornamental Horticulture? (see sample enclosed in this learning package).

2. Filmstrip and tape set, Choosing a Career in Ornamental Horticulture, available from Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, IL 61001.

3. Brochure, Exploring Occupational Opportunities in the Retail Flower Shop Business. Available from Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, IL 61001.

4. Local telephone directories (at least six copies for a class of 25 students).

RATIONALE

The purpose of this lesson is to give the students a working definition of ornamental horticulture. They will be made aware of the variety of jobs in the field and of the businesses in the local community which handle products or services in the field of ornamental horticulture.

SUGGESTED PROCEDURE

Begin the lesson by writing the definition of ornamental horticulture on the chalkboard. (Ornamental Horticulture is the art and science of growing, maintaining, merchandising, and servicing decorative plants, shrubs, turf, and trees.) Ask the students to write this definition on their worksheets. Next ask the students to brainstorm a list of ornamental horticulture occupations. Don't be surprised to discover that very few students are familiar with this occupational field. Use this fact to encourage the students to pay careful attention to the filmstrip.

After the students have seen the film, ask them to list additional occupations in ornamental horticulture which they saw in the filmstrip. By this time, your students should be aware of the large number of job opportunities within this field and know that these jobs are available for both men and women.

Distribute the brochure, Exploring Occupational Opportunities in the Retail Flower Shop Business. Ask the students to skim the brochure and list any additional occupations in ornamental horticulture which have not been listed.

Finish the class by distributing copies of the local telephone book and ask the students to list all of the local businesses which deal with the field of ornamental horticulture.

NAME _____

INTRODUCTION TO JOBS IN ORNAMENTAL HORTICULTURE

1. Ornamental horticulture is _____

_____

_____

2. Make a list of all the jobs you can think of in the field of ornamental horticulture.

   A. _____

   B. _____

   C. _____

   D. _____

   E. _____

   F. _____

   G. _____

   H. _____

3. List all the jobs mentioned in the filmstrip which you have not already listed above.

   A. _____

   B. _____

   C. _____

   D. _____

   E. _____

   F. _____

   G. _____

   H. _____

4. Quickly read through the brochure entitled Exploring Occupational Opportunities in the Retail Flower Shop Business. Then list any additional jobs in ornamental horticulture which you haven't already mentioned.

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

H. _____

5. Make a list of local businesses which deal in ornamental horticulture products or services.

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

H. _____

LEARNING ACTIVITY PACKAGE 19

Category: Ornamental Horticulture

Focus: Identification of Jobs in Ornamental Horticulture

Activity: Job Identification Game

Objective: At the conclusion of this lesson, the student will be able to demonstrate a knowledge of seven specific job titles in the field of ornamental horticulture by matching job titles and descriptions.

EQUIPMENT, SUPPLIES, AND FORMS

1. Copy of the game rules, Who Am I? (see sample enclosed in this learning package).
2. List of job titles from the field of Ornamental Horticulture (see sample enclosed in this learning package).
3. Nineteen job descriptions, the matching job titles, the field in which they are found, and their respective point values. All of these are found below and are to be pasted or taped to 4" x 6" index cards.
4. List of job descriptions (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students a summary of the occupations found within the field of ornamental horticulture.

SUGGESTED PROCEDURE

Allow a little extra time to prepare the game cards for this lesson.

MAKING THE GAME CARDS

This game uses 19 sets of two-card units. The materials to make these cards are printed on the following pages. You should make as many copies of these pages as you need so all the students in your class can play the game at one time. (Also make extra copies of the list of jobs below.)

Make the first card of the two-card unit by taping or pasting each job description (see below) on a 4" x 6" index card. Then put the specific job title for that description (see below) on the opposite side of the card.

The second card of each unit has the general field and point value for each job on the first card. Affix this general field name and point value (see below) to one side of a 4" x 6" card. (This second card was developed to assist the student in reducing the number of job titles which could match the job description.)

To assemble the units, place the second card (with the side with the general field and point value on it face up) for each job on top of the first card for each, covering the job title. Tape the top edges of the cards together. The job title is now hidden between the two cards.

For directions on how to play the game, see below.

WHO AM I?

HOW TO PLAY THE GAME

To play the game, all 19 sets of cards are spread out across a table top with the point values and general field listing face up, and the job descriptions face down. Divide the class into two teams. The first player from one of the teams selects a card, reads the general field from which the job is listed, then turns the card over to read aloud the abbreviated job description. After reading the description and referring to the list of specific job titles, the player gives the answer of which job title matches the description. The scorekeeper lifts the card and reads the correct answer. If the player answers correctly the proper number of points is awarded to the team. However, if the player misses the question, the proper number of points is subtracted from the team's total. The team with the highest number of points wins.

OCCUPATIONS IN ORNAMENTAL HORTICULTURE

Floriculture Cluster

1. Cut Flower Designer
2. Delivery Person
3. Field Inspector
4. Floral Designer
5. Florist
6. Florist Supply Sales Person
7. Flower Grower
8. Flower Sales Person
9. Flower Shop Manager
10. Shipping Clerk
11. Wedding Consultant

Greenhouse Operation and Management Cluster

1. Flower Grower
2. Fumigator
3. Greenhouse Employee
4. Greenhouse Foreman
5. Greenhouse Manager
6. Greenhouse Operator
7. Plant Potter
8. Plant Propagator
9. Shipping Foreman
10. Transplanter

Landscape and Landscape Management Cluster

1. Director of Tree Pruning Service
2. Director of Tree Spraying Service
3. Groundskeeper
4. Landscape Aide
5. Landscape Architect
6. Landscape Consultant
7. Landscape Contractor
8. Landscape Designer
9. Landscape Foreman
10. Landscape Gardener
11. Landscape Laborer
12. Park Employee
13. Park Superintendent
14. Pest Control Specialist
15. Tree Trimmer

OCCUPATIONS IN ORNAMENTAL HORTICULTURE (CONT.)

Turf Management Cluster

1. Commercial Sod Grower
2. Golf Course Superintendent
3. Greenskeeper
4. Greenskeeper Foreman
5. Grounds Foreman
6. Groundskeeper
7. Grounds Maintenance Employee
8. Lawn Mower Repair Person
9. Sod Cutter
10. Tractor Operator
11. Turf Consultant
12. Turf Research Technician
13. Turf Supply Sales Person

Nursery Operation and Management Cluster

1. Agricultural-Commodity Grader
2. Arborist
3. Bagger and Burlap Person
4. Delivery Person
5. Field Foreman
6. Field Inspector
7. Nursery Employee
8. Nursery Grower
9. Nursery Person
10. Plant Breeder
11. Sales Person
12. Shipping Foreman
13. Thinning Row Boss
14. Tractor Operator

OCCUPATIONS IN ORNAMENTAL HORTICULTURE (CONT.)

Horticulture Education and Research Cluster

1. Extension Specialist in Horticulture
2. Garden Magazine Editor
3. Geneticist
4. Horticulture Professor
5. Horticulture Research Specialist
6. Horticulture Teacher
7. O.H. (Ornamental Horticulture) Specialist
8. Ornamental Horticulturist
9. Plant Breeder
10. Plant Scientist
11. Soil Scientist
12. Turf Consultant
13. Turf Research Technician

Horticulture Sales Cluster

1. Catalog Person
2. Delivery Person
3. Flower Sales Person
4. Garden Center Employee
5. Garden Center Manager
6. Garden Center Mechanic
7. Garden Center Sales Person
8. Lawn and Garden Equipment Sales Person
9. Nursery Sales Person
10. O.H. Bookkeeper (Ornamental Horticulture)
11. O.H. Sales Manager (Ornamental Horticulture)
12. O.H. Truck Driver (Ornamental Horticulture)
13. Garden Center Sales Manager
14. Stockman

ORNAMENTAL HORTICULTURE OCCUPATIONS

JOB DESCRIPTION CARDS

1. I plan and carry out breeding programs to develop and improve varieties of field crops, ornamentals, and shrubs. These varieties must be superior in growth rate, adaptability, pest resistance, color, fruit, and form. I select and breed plants that have the desired characteristics to upgrade and improve plant stock.

Plant Breeder

2. I am responsible for buying, selling, and caring for the plants and flowers which are used in floral pieces. I also may work in a greenhouse growing some of the stock. My work involves making flower arrangements, corsages, wreaths, and other floral decorations; and selling and delivering flowers to customers.

Florist

3. I plan and direct instructional programs in horticulture and related areas. I work in a high school area vocational center, community college, or four-year university. At the high school and community college level, I am usually responsible for coordinating and supervising students engaged in on-the-job training.

Horticulture Teacher

4. I prepare soil and place it in flats, pots, and similar containers. Then I sow seeds, transplant seedlings, or start cuttings. As these plants grow I control the humidity, heat, and light; and weed, trim, and spray the plants. I also am responsible for the repair and maintenance of the greenhouse and greenhouse equipment.

Greenhouse Employee

5. The growing of shrubs, cut flowers, or flowering bulbs in the field is my job. I plan my planting according to the anticipated demand for each species and variety taking into account the availability of seed, bulbs, or seedling stock. I also must till, fertilize, sow, and harvest the crops and may be responsible for budding or grafting branches or twigs on seedling stock.

Flower Grower

6. I sell seedlings and plants for landscaping, fruit farming, and reforestation projects. I do more than just sell my products. I must be able to identify ornamental plants and their uses so I can advise customers on the proper methods for the planting, care, and trimming of their individual purchases.

Nursery Sales Person

7. I care for ornamental plants, move and arrange plants and supplies for display purposes, and do some selling. The garden center where I work may be part of a department store, nursery, greenhouse, or a separate establishment. My other duties include cleaning and stocking shelves and counters, caring for plants, unloading supplies, making deliveries, and other sale-related tasks.

Garden Center Employee

8. Using climbing hooks and belts or ladders, to climb trees and gain access to work areas, I cable and brace weak or damaged tree limbs. I cut away dead and excess branches from trees using handsaws, pruning hooks, shears, and long-handled clippers. Sometimes I work from trucks equipped with hydraulic lifts and power pruners. Tar or other protective substances are then applied to cut surfaces to protect the trees against insects.

Tree Trimmer

9. I am responsible for the successful operation and maintenance of a garden center, whether it be part of a larger retail store or a separate establishment. I am responsible for the ordering of merchandise, stocking and displaying of merchandise, and selling. I oversee sales personnel, maintain inventory levels, and introduce new items.

Garden Center Manager

10. I am responsible for the operation of a greenhouse. I supervise the employees, order supplies and flowers, sell flowers over the counter, and see that deliveries are made on schedule. I must have knowledge of crop production techniques, business principles, and personnel management.

Greenhouse Manager

11. My job is to treat and care for trees; to transplant, fertilize, and protect them from diseases, insects, or decay. I may remove dead trees or branches and limbs, prune trees, and apply cables or bracing. I am often called upon to give advice regarding the care and management of trees.

Arborist

12. I instruct extension workers and develop specialized service activities in the field of horticulture. I plan, organize, and evaluate the training programs that are used to train extension workers.

Extension Specialist in Horticulture

13. I give advice on land planning, the planting of ornamentals, help select sites, do preliminary studies, and prepare the working drawings and cost estimates for landscape contractors. During construction, I supervise the work and approve the materials. I work in business and industry and with individual homeowners. The primary objective of my work is to integrate people, buildings, and sites, using plants and space as the two major tools of my profession.

Landscape Architect

14. I may work in a fruit tree nursery, an ornamental tree and shrub nursery, or a forest tree nursery. I am involved in the growing of seedlings and plants. My work involves preparing seedbeds, planting seedlings, weeding, spraying and grafting, cutting sod, transplanting trees, and processing forest tree seeds. The maintenance of buildings and equipment is also a part of my job.

Nursery Employee

15. I am responsible for the maintenance of the grounds, shrubs, and turf of a golf course. I must use mowers and other power equipment to till, cultivate, and grade new turf areas. I apply lime, fertilizer, pesticides, and water the turf. I also prepare the ground for new greens and plant new shrubs while trimming and spraying existing trees and shrubs.

Greenskeeper

16. I supervise and direct employees who are involved in the overall maintenance of a golf course. The maintenance of a golf course includes caring for the turf to keep it in good condition, using irrigation and drainage equipment, maintaining sand traps, changing the location of cups, and repairing equipment and buildings. These jobs must be accomplished without interrupting play on the course. I am responsible for interviewing, hiring, and training employees; keeping employee records; preparing budgets and reports; and purchasing materials and equipment.

Golf Course Superintendent

17. I design and arrange floral pieces and decorations. I must select flower and foliage and use pins, tapes, and wire to form bouquets, corsages, wreaths, and other designs. I also may plan the floral setting for weddings, funerals, parties, and other special occasions.

Floral Designer

18. I start new plants from seeds, cuttings, grafting, or other means. I know the techniques of propagating hundreds of woody and herbaceous plants, how to operate a greenhouse, hotbeds, and outdoor seedbeds. In most horticultural businesses, my job is not a full-time job. This means the people in my profession must also do other jobs.

Plant Propagator

19. I manage and operate a nursery where a selection of trees, shrubs, and ornamental flowering plants are grown. These plants are then supplied to landscape contractors or private homeowners. Some common types of nurseries are cash-and-carry nurseries, mail-order nurseries, landscape nurseries, and agency nurseries. I must also make decisions in regard to financing, purchasing, sales, hiring, and training of employees and the maintenance of facilities.

Nursery Person

GENERAL FIELD AND POINT VALUE CARDS

For #1:

Nursery Operation and Management Cluster
For 3 points, who am I?

For #2:

Floriculture Cluster
For 3 points, who am I?

For #3:

Horticulture Education and Research Cluster
For 3 points, who am I?

For #4:

Greenhouse Operation and Management Cluster
For 5 points, who am I?

For #5:

Greenhouse Operation and Management Cluster
For 10 points, who am I?

For #6:

Nursery Operation and Management Cluster
For 3 points, who am I?

For #7:

Horticulture Sales Cluster
For 5 points, who am I?

For #8:

Landscape and Landscape Management Cluster
For 5 points, who am I?

GENERAL FIELD AND POINT VALUE CARDS (CONT.)

For #9:

Horticulture Sales Cluster
For 3 points, who am I?

For #10:

Greenhouse Operation and Management Cluster
For 5 points, who am I?

For #11:

Nursery Operation and Management Cluster
For 10 points, who am I?

For #12:

Horticulture Education and Research Cluster
For 5 points, who am I?

For #13:

Landscape and Landscape Management Cluster
For 10 points, who am I?

For #14:

Nursery Operation and Management Cluster
For 3 points, who am I?

For #15:

Turf Management Cluster
For 10 points, who am I?

For #16:

Turf Management Cluster
For 5 points, who am I?

GENERAL FIELD AND POINT VALUE CARDS (CONT.)

For #17:

Floriculture Cluster
For 5 points, who am I?

For #18:

Greenhouse Operation and Management Cluster
For 10 points, who am I?

For #19:

Nursery Operation and Management Cluster
For 10 points, who am I?

LEARNING ACTIVITY PACKAGE 20

Category: Ornamental Horticulture

Focus: Landscape Architect

Activity: Resource Person

Objective: At the conclusion of this lesson, the student will be able to list and describe on a student worksheet some of the average working conditions, basic duties, responsibilities, and salary ranges of at least three jobs in landscaping.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Looking at Occupations in Landscaping (see sample included in the back of this notebook).
2. Resource Person Information Sheet (see sample included in the back of this notebook).

RATIONALE

The purpose of this activity is to expose the students to careers in the field of landscaping. It provides students with an opportunity to meet and talk with someone dealing directly with the job and to gain information and exposure not normally available from the classroom.

SUGGESTED PROCEDURE

Contact your resource person well in advance of the actual visit, explaining the lesson's objective and the manner in which you wish to conduct the lesson. This particular occupational area lends itself very well to the use of slides. Suggest that your resource person bring along some slides of the work or some other visual material.

If a landscape architect is not available in your area, choose a substitute resource person, such as a landscape contractor, a landscape gardener, or a park superintendent.

LEARNING ACTIVITY PACKAGE 21

Category: Ornamental Horticulture

Focus: Occupations in Nursery and Greenhouse Operations

Activity: Tool Identification Game

Objective: At the conclusion of this lesson, the student will be able to match on a student worksheet the tools and supplies used in nursery and greenhouse operations to the people (job titles) who would use these items in their everyday work.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: What Is It and Who Uses It? (see sample enclosed in this learning package).

2. Obtain the following tools and supplies (these probably can be borrowed from a local garden center):

Nursery Growing Containers	Nursery Spade
Hedge Shears	Ross Root Feeder
Peat Pellets	Plant Markers
Plant Ties	Plant Guards
Tree Wrap	Rootone
Bamboo Can Stakes	Terragreen
Dandelion Digger	Vermiculite
Grafting Wax	Cow Manure (Bagged)
Tree Wound Paint	Grass Shears
Sprayer	Tree Saw
Bulb Planter	

3. List of occupations in ornamental horticulture (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students an opportunity to see some of the tools and supplies commonly used by people in nursery and greenhouse operations.

SUGGESTED PROCEDURE

This lesson can be reduced to a simple matching game. Using the student answer sheet (below), the students should match the tool or supply to its correct name and then match the tool or supply to the person (job title) who uses it.

The tools and supplies are spread around the classroom. Each item is numbered (follow the numbering on the teacher's answer key, first column) and the students are given a copy of the instructions, a list of tools and supplies which will match the items in the classroom, and a list of job titles from the field of nursery and greenhouse occupations. (Make as many copies of the answer sheet and student instructions as you need for your class.)

As they are answering the questions, allow the students to walk around and carefully examine each item displayed in the classroom.

If the actual tools and supplies are not available, pictures can be substituted.

WHAT IS IT? WHAT'S IT DO? WHO USES IT?

IDENTIFICATION CONTEST

Part I

Instructions:

Using the following list, match the correct tool or supplies to the numbered items located around the room.

Write the number of your answer on the answer sheet in the column marked WHAT IS IT?

1. Terragreen
2. Rootone
3. Cow Manure (Bagged)
4. Grafting Wax
5. Tree Wound Paint
6. Plant Guards
7. Nursery Growing Containers
8. Dandelion Digger
9. Ross Root Feeder
10. Tree Saw
11. Sprayer
12. Bulb Planter
13. Vermiculite
14. Peat Pellets
15. Bamboo Cane Stakes
16. Plant Markers
17. Hedge Shears
18. Plant Ties
19. Tree Wrap
20. Nursery Spade
21. Grass Shears

WHAT IS IT? WHAT'S IT DO? WHO USES IT?

STUDENT ANSWER SHEET

	What is it?	What's it do?	Who uses it?
Terragreen	____	____	____
Rootone	____	____	____
Cow manure	____	____	____
Grafting wax	____	____	____
Tree wound paint	____	____	____
Plant guards	____	____	____
Nursery growing containers	____	____	____
Dandelion digger	____	____	____
Ross Root Feeder	____	____	____
Tree saw	____	____	____
Sprayer	____	____	____
Bulb planter	____	____	____
Vermiculite	____	____	____
Peat Pellets	____	____	____
Bamboo cane stakes	____	____	____
Plant markers	____	____	____
Hedge shears	____	____	____
Plant ties	____	____	____
Tree wrap	____	____	____
Nursery spade	____	____	____
Grass shears	____	____	____

Part II

Instructions:

The following is a list of functions for which tools or supplies may be used. Match the function to the correct tool or supply. Write the letter of your answer on the answer sheet in the column marked, WHAT'S IT DO?

A. Bonds or cements two different plant stems or twigs together into one new "hybrid" plant.
B. Confines and protects young growing plants in large nursery growing operations.
C. Used for trimming and shaping hedges.
D. Fertilizer used in tree planting; adds nutrients to the soil.
E. Used for holding taller, weaker plants to a stake.
F. Allows for a looser soil composition, and to some degree acts as a fertilizer for plants.
G. Used to neatly and cleanly remove tree limbs without damaging the rest of the plant.
H. Gives support to taller plants, and offers protection against strong winds.
I. Offers a lightweight, weather-resistant protection around a tree. Often used for protection against insects and animal damage to trees.
J. Used as a protective barrier for injured trees; it covers an exposed living (sensitive) area of a tree.
K. Used for spraying fertilizer or insecticides on plants.
L. Specially shaped shovel, used for a variety of activities, from digging holes for the planting of shrubs to trenching for water pipes.
M. Used for cutting and removing weeds (usually without its user having to bend over); especially useful against dandelions.
N. Protects plants from animal damage; also acts as support for some plants.
O. Tags used for plant identification.
P. Used for trimming grass.
Q. Tool used for putting fertilizer deep into ground next to the root system.
R. Used for planting bulbs.
S. Small clay chips used to loosen soil and hold water for plants.
T. Chemical compound used to clean and prepare plants after they have been cut; increases root growth.
U. Soil conditioner, used to start young plants for rapid growth.

WHAT IS IT? WHAT'S IT DO? WHO USES IT?

TEACHER S ANSWER KEY

	What is it?	What's it do?	Who uses it?
Terragreen	1	U	Each of these items is used in a variety of jobs. A class discussion could be conducted to fill in these spaces, or review the students' work.
Rootone	2	T	
Cow manure (bagged)	3	D	
Grafting wax	4	A	
Tree wound paint	5	J	
Plant guards	6	N	
Nursery growing containers	15	B	
Dandelion digger	16	M	
Ross Root Feeder	17	Q	
Tree saw	14	G	
Sprayer	13	K	
Bulb planter	12	R	
Vermiculite	8	S	
Peat pellets	18	F	
Bamboo cane stakes	19	H	
Plant markers	10	O	
Hedge shears	11	C	
Plant ties	20	E	
Tree wrap	7	I	
Nursery spade	21	L	
Grass shears	9	P	

Part III

Directions:

Using the list of occupations in ornamental horticulture, match the correct job title to the tools and supplies the horticulturist would use in the performance of his/her occupation. Write the number of your answer on the answer sheet in the column marked WHO USES IT?

OCCUPATIONS IN ORNAMENTAL HORTICULTURE

Floriculture Cluster

1. Cut Flower Designer
2. Delivery Person
3. Field Inspector
4. Floral Designer
5. Florist
6. Florist Supply Sales Person
7. Flower Grower
8. Flower Sales Person
9. Flower Shop Manager
10. Shipping Clerk
11. Wedding Consultant

Turf Management Cluster

12. Commercial Sod Grower
13. Golf Course Superintendent
14. Greenskeeper
15. Greenskeeper Foreman
16. Grounds Foreman
17. Groundskeeper
18. Grounds Maintenance Employee
19. Lawn Mower Repair Person
20. Sod Cutter
21. Tractor Operator
22. Turf Consultant
23. Turf Research Technician
24. Turf Supply Sales Person

Greenhouse Operation and Management Cluster

25. Flower Grower
26. Fumigator
27. Greenhouse Employee
28. Greenhouse Foreman
29. Greenhouse Manager
30. Greenhouse Operator
31. Plant Potter
32. Plant Propagator
33. Shipping Foreman
34. Transplanter

Landscape and Landscape Management Cluster

35. Director of Tree Pruning Service
36. Director of Tree Spraying Service
37. Groundskeeper
38. Landscape Aide
39. Landscape Architect
40. Landscape Consultant
41. Landscape Contractor
42. Landscape Designer
43. Landscape Foreman
44. Landscape Gardener
45. Landscape Laborer
46. Park Employee
47. Park Superintendent
48. Pest Control Specialist
49. Tree Trimmer

OCCUPATIONS IN ORNAMENTAL HORTICULTURE (CONT.)

Nursery Operation and Management Cluster

50. Agricultural-Commodity Grader
51. Arborist
52. Bagger and Burlap Worker
53. Delivery Person
54. Field Foreman
55. Field Inspector
56. Nursery Employee
57. Nursery Grower
58. Nursery Person
59. Plant Breeder
60. Sales Person
61. Shipping Foreman
62. Thinning Row Boss
63. Tractor Operator

Horticulture Education and Research Cluster

64. Extension Specialist in Horticulture
65. Garden Magazine Editor
66. Geneticist
67. Horticulture Professor
68. Horticulture Research Specialist
69. Horticulture Teacher
70. O.H. (Ornamental Horticulture) Specialist
71. Ornamental Horticulturist
72. Plant Breeder
73. Plant Scientist
74. Soil Scientist
75. Turf Consultant
76. Turf Research Technician

Horticulture Sales Cluster

77. Catalog Person
78. Delivery Person
79. Flower Sales Person
80. Garden Center Employee
81. Garden Center Manager
82. Garden Center Mechanic
83. Garden Center Sales Person
84. Lawn and Garden Equipment Sales Person
85. Nursery Sales Person
86. O.H. Bookkeeper
87. O.H. Sales Manager
88. O.H. Truck Driver
89. Garden Center Sales Manager
90. Stock Person

LEARNING ACTIVITY PACKAGE 22

Category: Ornamental Horticulture

Focus: Florist

Activity: Field Trip: Flower Shop

Objective: At the conclusion of this lesson, the student will have performed a few of the basic duties, and be able to identify, using a student worksheet, some of the responsibilities, educational requirements, and approximate salary ranges of at least two jobs in the field of floriculture.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Could You Be a Florist? (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose the students to careers in a flower shop. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and experience not normally available from the classroom teacher.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. Transportation and parental permission forms are best handled several days before the actual trip. The people who are to talk with your students should be aware of the objective for the lesson, and be given a list of questions that may be asked by the students. Determine if some of the students could assist in one of the duties of a florist, such as pruning, making a flower arrangement, or watering the plants. Student involvement is a very important part of any field trip. It increases interest and enthusiasm.

On the day of the trip, remind the students of the things they should be looking for, as stated in the objective for this lesson.

ALTERNATE ACTIVITIES

1. Have the students plan and make floral arrangements using artificial flowers and plants. This could become a contest with the art teacher being the judge and a prize given for the best arrangement.
2. Build a classroom terrarium with growing plants. Use a large glass jar for the planting. In the jar use potting soil and choose mosses, ferns, and other small growing plants to complete your terrarium.
3. Do experiments with plants to see how different soils and nutrients affect growth. Select one type of plant and plant it in different soils, use different amounts of water and sunlight, and select different types of plant foods to feed the plants. Keep records of what is done to each plant and chart the growth patterns of the plants.
4. Use the "Listen to Learn" cassette series Careers in Horticulture, Eye Gate House, 146-01 Archer Avenue, Jamaica, NY 11435.
5. Use the captioned filmstrip Do You Like Flowers?, Eye Gate House, 146-01 Archer Avenue, Jamaica, NY 11435.

LEARNING ACTIVITY PACKAGE 23

Category: Ornamental Horticulture

Focus: Turf Management

Activity: Field Trip: Golf Course

Objective: At the conclusion of this lesson, the student will have observed and be able to identify and explain on a student worksheet some of the basic job duties, employment opportunities, and educational requirements for a person in turf management.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Is a Job in Turf Management for You? (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose students to careers in the area of turf management. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and experiences not normally available from the classroom.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. The people who will be talking with your students should be aware of the lesson's objective and should be given a list of questions that the students are likely to ask.

Ask if some of the students could assist in one of the duties of a greenskeeper at a golf course such as applying fertilizer, cutting greens, changing the cup placement, or raking the traps. Involving students is always a good way to keep their interest.

On the day of the trip, remind the students of the information they should be looking for.

If a greenskeeper is not available in your area, then contact one of the following people: golf course superintendent, commercial sod farmer, highway turf consultant, or turf (lawn and garden) sales center manager.

LEARNING ACTIVITY PACKAGE 24

Category: Ornamental Horticulture

Focus: Golf Course Superintendent

Activity: Designing a Golf Course

Objective: At the conclusion of this lesson, the student will demonstrate his/her knowledge of golf course designing and planning by making a scale-model golf course.

EQUIPMENT, SUPPLIES, AND FORMS

1. Golf score cards from several local courses.
2. Maps or aerial photographs of local golf courses.
3. Student worksheet: Scale Model Golf Course (see sample enclosed in this learning package).
4. Students should bring pencils, paper, a ruler, and a compass.

RATIONALE

The purpose of this lesson is to give students an awareness of the decision-making and planning that goes into make a golf course.

SUGGESTED PROCEDURE

Many of your students may never have been to a golf course. Some of them may not know the difference between a sand trap and a golf cart. However, this lesson does not require a knowledge of the game of golf. The ability to plan ahead, the use of simple mathematics, and the ability to be creative are all that is needed for a student to complete this lesson.

To assist those students who have never been to a golf course, obtain the score cards from several local courses. Printed on these cards is a map of the course. Also try to obtain an aerial photograph of the local course and discuss it with your students. This is especially helpful for those who are unfamiliar with a golf course.

You are going to ask the students to plan and draw a scale model of a golf course. There are a few necessary specifications for a golf course. The students should be aware of these specifications before they being designing their own course. These specifications are included on the student worksheet.

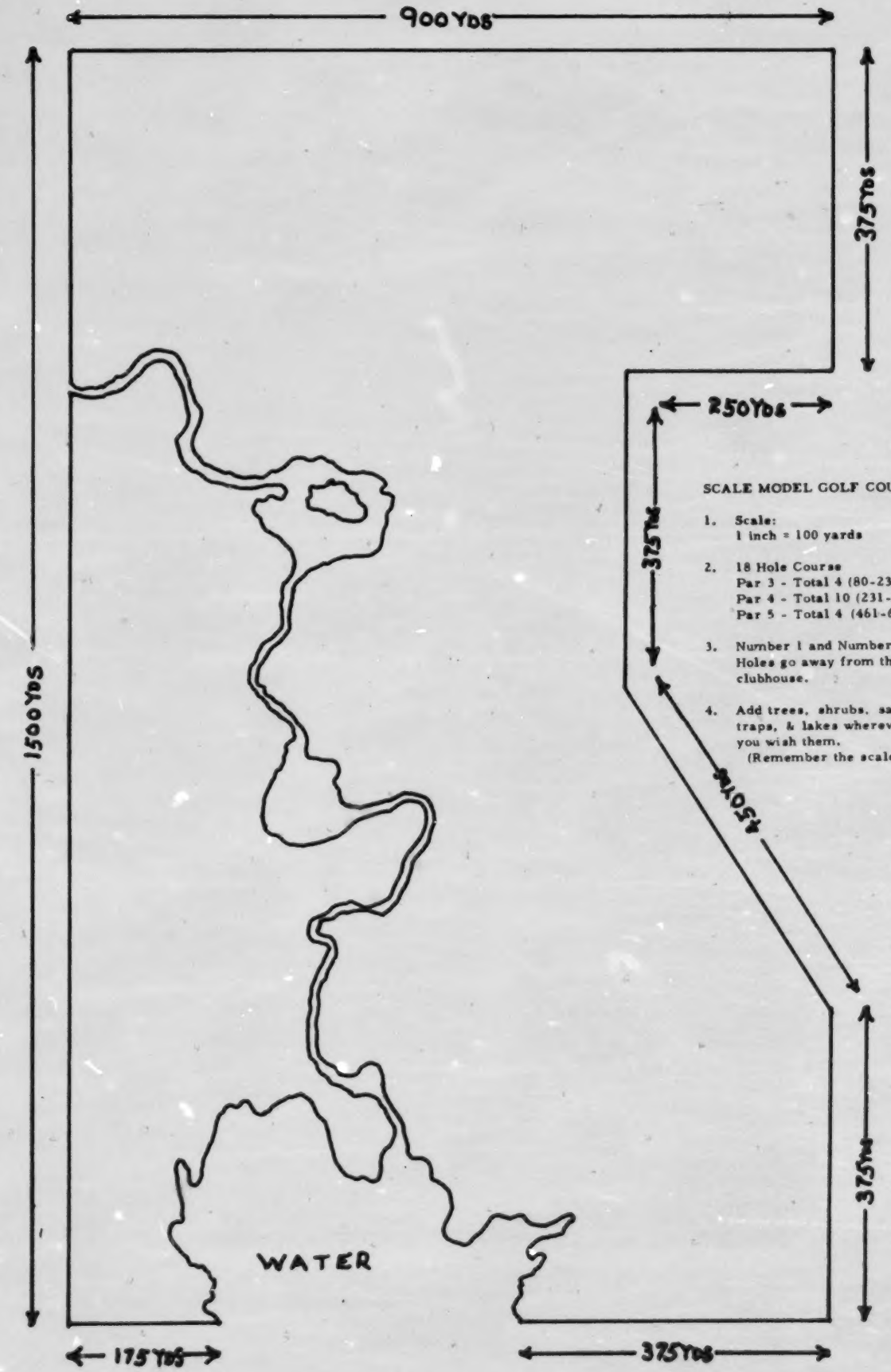
SPECIFICATIONS FOR AN 18 HOLE, PAR 72, GOLF COURSE

1. You must have 18 different holes, made up of four par 3's, 10 par 4's, and four par 5's.
2. Distance per hole:

   Par 3's range between 80 yards and 250 yards (average 170)
   Par 4's range between 251 yards and 460 yards (average 410)
   Par 5's range between 461 yards and 630 yards (average 540)
3. Hole #1 and Hole #10 should play away from the clubhouse. Hole #9 and Hole #18 should finish back at the clubhouse.

   The size of the green, the size of the trees, the size and number of sand traps and water hazards, and the placement of trees and shrubs are, within limits, left up to the designer.

   Explain to the students that they are to include the clubhouse, parking lot, equipment sheds, trees, greens, bridges, shelters, restrooms, water hazards, sand traps, shrubs, and anything else they can think of for their scale model.



SCALE MODEL GOLF COURSE

1. Scale:
   1 inch = 100 yards

2. 18 Hole Course
   Par 3 - Total 4 (80-230 Yds.)
   Par 4 - Total 10 (231-460 Yds.)
   Par 5 - Total 4 (461-630 Yds.)

3. Number 1 and Number 10 Holes go away from the clubhouse.

4. Add trees, shrubs, sand traps, & lakes wherever you wish them.
   (Remember the scale)

LEARNING ACTIVITY PACKAGE 25

Category: Production Agriculture

Focus: Overview of Production Agriculture

Activity: Filmstrip and Discussion

Objective: At the conclusion of this lesson, the student will be able to describe, on a student worksheet, at least one job characteristic for a minimum of 10 occupations in the field of production agriculture.

EQUIPMENT, SUPPLIES, AND FORMS

1. The Famine Fighters, filmstrip and cassette tape recording, 8 1/2 minutes. Can be purchased from Vocational Agriculture Services, 434 Mumford Hall, University of Illinois, Urbana, IL 61001.

2. Student worksheet: Occupations in Production Agriculture (see sample enclosed in this learning package).

3. Occupational Outlook Handbook, at least 6 copies for a class of 25.

4. Handbook of Agricultural Occupations, Norman K. Hoover, Interstate Publishers, Danville, IL 61832.

RATIONALE

The purpose of this lesson is to first give the students a brief overview of the jobs available in the field of production agriculture; and second, give the students the opportunity to know at least one thing about each job listed in this field.

SUGGESTED PROCEDURE

In this activity the students are to determine the following about positions listed in production agriculture: jobs which require large cash investments; jobs which require education beyond high school; and jobs which can be entered directly after high school. Some of the answers on the student worksheets are subject to personal opinion. For example, does a farmhand need additional training? Sometimes yes, sometimes no. Certainly some of the jobs in this field would merit listing two requirements. For example, a fish farmer requires a large cash investment to begin, and needs a great deal of training and experience.

Introduce the two reference materials: Occupational Outlook Handbook, and Handbook of Agricultural Occupations. Be sure to explain how these books are to be used.

When the students understand what they are to do, divide the class into small groups, four to six students to a group, and allow them to have the remaining class time to work on their worksheets.

OCCUPATIONS IN PRODUCTION AGRICULTURE

DIRECTIONS

Place the letter C next to those jobs requiring a large cash investment.

Place the letter E next to those jobs which require additional education beyond high school.

Place the letter N next to those jobs which you can do right now or upon completion of high school.

Paid Employment Occupations in Animal Production

___1. Agricultural Aide
___2. Animal Geneticist
___3. Animal Husbandry Person
___4. Animal Nutritionist
___5. Beef Herd Grower
___6. Cow Puncher
___7. Dairy Herd Grower
___8. Farm Manager
___9. Feedlot Manager
___10. Horse Trainer
___11. Physiologist
___12. Poultry Foreman
___13. Poultry Husbandry Person
___14. Sheepherder
___15. Swine Grower

Paid Employment Occupations in Plant Production

___1. Agronomist
___2. Crop Duster
___3. Farm Equipment Operator
___4. Farm Foreman
___5. Farm Manager
___6. Field Hauler
___7. Fruit Caretaker
___8. Grain Farmhand
___9. Harvest Contractor
___10. Orchardist
___11. Range Manager
___12. Seed Corn Production Manager
___13. Vegetable Farmhand

OCCUPATIONS IN PRODUCTION AGRICULTURE (CONT.)

Self-Employment Occupations in Animal Production

____1. Artificial Inseminator
____2. Cattle Rancher
____3. Dairy Farmer
____4. Dog Breeder
____5. Fish Farmer
____6. Game Farmer
____7. Cattler Rancher
____8. Livestock Farmer
____9. Poultry Farmer
___10. Rabbit Farmer
___11. Sheep Farmer
___12. Swine Farmer

Occupations in Animal Care and Management

____1. Animal Attendant
____2. Animal Caretaker
____3. Artificial Inseminator
____4. Chicken Sexer
____5. Farrier
____6. Game Biologist
____7. Horse Trainer
____8. Kennel Attendant
____9. Kennel Manager
___10. Large Animal Technician
___11. Pet Shop Manager
___12. Small Animal Technician
___13. Specialty Animal Farmer
___14. Veterinarian
___15. Veterinarian Aide

Self-Employment Occupations in Plant Production

____1. Cash Grain Farmer
____2. Cotton Farmer
____3. Fruit Farmer
____4. Harvest Contractor
____5. Hay Farmer
____6. Seed Grower
____7. Tobacco Farmer
____8. Vegetable Grower

LEARNING ACTIVITY PACKAGE 26

Category: Production Agriculture

Focus: Swine Farmer

Activity: Field Trip: Swine Farm

Objective: At the conclusion of this lesson, the student will have performed a few of the basic jobs and be able to identify, using a student worksheet, some of the responsibilities, educational requirements, and approximate salary ranges of a swine farmer.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Looking at a Career in Swine Production (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose the students to careers on a swine farm. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and experience not normally available in the classroom.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. The people who will be talking with the students should be aware of the objectives of the lesson, and should be given in advance a list of questions the students are likely to have. Ask that some of the students be allowed to assist in the duties of a swine farmer such as feeding swine, giving medication, loading the swine onto a truck for shipping, etc.

If a resource person or facility is not available in your area, the following list of possible alternates may be selected: cattle farm, poultry farm, or grain farm.

ALTERNATE ACTIVITIES

1. Have the students design and construct a model farm. The farm may be of any type - livestock, grain, dairy, etc. This could be done as a class project, in small groups, or by individual students. The construction materials can be anything that is available - cardboard, balsa wood, tooth picks, sheets of packing foam, etc. Farming publications and periodicals may be used to aid in the planning of such a project.

2. Obtain or construct a small incubator that can be set up in the classroom. Obtain fertile chicken eggs from a hatchery or farm and hatch them in the incubator. You may also want to "candle" eggs to determine air pockets, texture, and thickness of the shell. Reference: Chickens and How to Raise Them, Louis Darling, William Morrow, New York.

LEARNING ACTIVITY PACKAGE 27

Category: Production Agriculture

Focus: Veterinarian

Activity: Speaker/Resource Person

Objective: At the conclusion of this lesson, the student will be able to describe on a student worksheet the average working conditions, job duties, educational requirements, and employment opportunities of a veterinarian.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Could You Be a Veterinarian? (see sample in the back of this notebook).
2. The Covenant, 16 mm film, available from Modern Talking Picture Service, 1687 Elmhurst Road, Elk Grove Village, IL 60007 (free loan).
3. Resource Person Information Sheet (see sample included in the back of this notebook).

RATIONALE

The purpose of this activity is to expose students to careers in the veterinary field. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and exposure not normally available in the classroom.

SUGGESTED PROCEDURE

Contact the resource person well in advance of the actual visit. The person should be aware of the objective of this lesson and of the manner in which you wish the presentation conducted.

The 20-minute film entitled The Covenant is an excellent lead-in to the occupation of a veterinarian. It should be shown, with the permission of your resource person, before the presentation.

If a veterinarian is not available as a resource person, select one of the following people: large feed lot operation manager, farm manager familiar with large-scale livestock operations, farm pharmaceutical sales and service representative, or a veterinarian aide (two-year community college program graduate).

ALTERNATE ACTIVITIES

1. Organize a field trip to a veterinarian's clinic where students can see firsthand the instruments and facilities used by veterinarians.
2. Plan a classroom discussion with a guidance counselor, science teacher, or a representative of a university. Discuss the types of high school courses needed to enter veterinarian school and the course of study to be followed after acceptance to a veterinarian school.
3. Use "Listen to Learn" cassette series Careers in Veterinary Medicine, Eye Gate House, 146-01 Archer Avenue, Jamaica, NY 11435.

LEARNING ACTIVITY PACKAGE 28

Category: Production Agriculture

Focus: Small Animal Care Occupations

Activity: Field Trip: Dog Kennel

Objective: At the conclusion of this lesson, the student will be able to identify, using a student worksheet, some of the responsibilities, educational requirements, and approximate salary ranges of a person employed in a dog kennel.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Is a Career in Small Animal Care for You? (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose students to careers in kennel operations. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and experiences not normally available in the classroom.

SUGGESTED PROCEDURE

The field trip should be arranged well in advance. The people who will be talking with the students should be aware of the objective of the lesson, and should be given a list of questions that the students are likely to ask. Determine if the students may be allowed to assist in some of the duties of kennel employees, such as feeding the animals, giving medication, and walking or bathing the animals.

If such a resource person or facility is not available in your area, one of the following alternates may be selected: pet shop, zoo, pet grooming establishment, or small animal farm (i.e., mink, chinchilla, rabbit, etc).

LEARNING ACTIVITY PACKAGE 29

Category: Production Agriculture

Focus: Pet Shop Management

Activity: Field Trip: Pet Shop

Objective: At the conclusion of this lesson, the student will be able to identify, and record on a student worksheet, five of the responsibilities and qualifications of a pet shop manager.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student worksheet: Could You Manage a Pet Shop? (see sample included in the back of this notebook).
2. Field Trip Observation Form (see sample included in the back of this notebook).

RATIONALE

The purpose of this field trip is to expose students to careers in the area of pet shop management. It provides students with an opportunity to meet and talk with someone dealing directly with the jobs involved and to gain information and exposure not normally available in the classroom.

SUGGESTED PROCEDURE

Arrange the field trip well in advance. Such things as transportation and parental permission slips are best handled several days before the actual trip.

The people who will be talking with the students should be aware of the objectives of the lesson and should be given a list of questions that the students are likely to ask.

Ask if the students could assist in one of the duties of a pet shop manager such as animal feeding, cleaning the tanks, answering the telephone, etc.

If such a resource person is not available in your area, choose one of these alternates: small animal farmer, clerk or department head from department store pet shop, zoo keeper, or county extension service advisor.

LEARNING ACTIVITY PACKAGE 30

Category: Applied Biological and Agricultural Occupations

Focus: Student Evaluation

Activity: Completion of Student Evaluation

Objective: At the conclusion of this lesson, the student will have evaluated the applied biological and agricultural occupations cluster by filling out a student evaluation form.

EQUIPMENT, SUPPLIES, AND FORMS

1. Student Evaluation Form (see sample enclosed in this learning package).

RATIONALE

The purpose of this lesson is to give the students a chance to reflect and comment on the experiences that have been provided during this cluster.

SUGGESTED PROCEDURE

The students should have an opportunity to express their feelings about the experiences and the methods used to plan and develop these experiences. The information collected from this evaluation should provide insight into how this cluster can be improved. It will also reveal the areas within the cluster that most interest students.

EVALUATION OF THE APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS CLUSTER ORIENTATION EXPERIENCES

Student Evaluation Form

In order that we may find out how you feel about the activities included in the Applied Biological and Agricultural Occupations cluster, we would like you to give us your opinions about the statements below. Use the following scale: 1 = Always, 2 = Usually, 3 = Sometimes, 4 = Never.

	Always	Usually	Sometimes	Never
1. The field trips were useful in learning about agricultural occupations.	1	2	3	4
2. The guest speakers helped me to learn more about their occupations.	1	2	3	4
3. The occupational summaries were useful in helping me plan my occupational career.	1	2	3	4
4. The student projects helped me understand what people employed in agricultural occupations do.	1	2	3	4
5. The activities in the following areas were very interesting:				
Production Agriculture	1	2	3	4
Agricultural Mechanics	1	2	3	4
Agricultural Products, Supplies, Sales, and Services	1	2	3	4
Natural Resources, Forestry, and Environmental Control	1	2	3	4
Ornamental Horticulture	1	2	3	4
6. There was too much classroom work included in the learning activities related to agricultural occupations.	1	2	3	4
7. I am more interested in agricultural occupations than I was before participating in the activities in this class.	1	2	3	4
8. The filmstrips and films made me more interested in agricultural occupations.	1	2	3	4

9. The things I liked best about this orientation to agriculture were:

_____

_____

_____

_____

_____

_____

10. The things I liked least about this orientation to agriculture were:

_____

_____

_____

_____

_____

STUDENT FORMS

Resource Person Information Sheet

Field Trip Observation Form

Interview Questions

Observation/Interview Forms

Looking at a Career in Farm Machinery

Looking at the Job of an Agricultural Supplies Sales Manager

Is Forestry an Occupation for You?

Looking at a Career in Wildlife Conservation

Looking at Occupations in Landscaping

Could You Be a Florist?

Is a Job in Turf Management for You?

Looking at a Career in Swine Production

Could You Be a Veterinarian?

Is a Career in Small Animal Care for You?

Could You Manage a Pet Shop?

RESOURCE PERSON INFORMATION SHEET

Resource Person: _____ Date: _____

Occupational Area: _____ Your Name: _____

NOTE TO STUDENT: You are required to complete one of these forms for every resource person visiting our class. In order to receive credit, be as thorough as possible.

1. List typical jobs within the occupational area:

2. Job responsibilities:

3. Working conditions:

4. Personality traits needed for occupational area:

5. Education and/or training required:

6. Advantages and disadvantages of occupational field:

7. Advancement opportunities in this occupational field:

8. Salary range (approximate starting to estimated maximum):

9. Your personal reaction to this occupational area as described by the speaker:

10. Describe your reaction to this speaker and make recommendations for improvement:

FIELD TRIP OBSERVATION FORM

Student Name _____

I. Job title _____

II. Description of major job duties (please list).

A. _____

B. _____

C. _____

D. _____

E. _____

III. Job characteristics. Check those which apply to a worker in this occupation.

___ A. Able to see physical results of work.
___ B. Competitive — must compete for advancement.
___ C. Directs activities of others — supervisory.
___ D. Helps people.
___ E. High level of responsibility.
___ F. Motivates others — must have ability to influence others.
___ G. Repetitious work.
___ H. Requires physical stamina.
___ I. Self-expression is encouraged.
___ J. Closely supervised by superiors.
___ K. Works with technical data.
___ L. Works with people.
___ M. Works alone.
___ N. Manual skills required.

IV. Educational requirements.

A. Check level required for this occupation.

___ 1. High school education desirable.
___ 2. High school education required.
___ 3. Junior college or trade school.
___ 4. Four year college — baccalaureate.
___ 5. Advanced degree — master's.
___ 6. Advanced degree — doctorate.

B. Where can this education be obtained? Name one or two schools or industries where training is available (addresses, if available).

_____

_____

C. List the course or subject areas one would need to study for this job.

_____

_____

_____

_____

D. How many years of experience and what type of training is needed before entering this occupation?

_____

_____

_____

V. Employment opportunities.

A. List employers in your area who employ people for this job.

_____

_____

B. What starting wage or salary could one expect? _____

C. How are wages determined?

Union ___ Individual contract ___ Salary schedule ___

D. What position could a person advance to after experience is obtained?

_____

E. How much pay would you expect to receive in this advanced position? _____

F. What are some of the fringe benefits of this occupation?

_____

VI. Job requirements.

A. Is a license or union membership required? _____

B. What must a person do to qualify for this license or membership?

_____

C. Where can this license or membership be obtained?

_____

D. Is bonding necessary? _____

E. Are tools required? _____

F. Do employees buy uniforms? _____

VII. Working conditions. Check those which apply to this occupation.

___ A. Overtime required.
___ B. Outdoor work.
___ C. Indoor work.
___ D. Hazardous conditions (specify). _____
___ E. Variety of jobs.
___ F. Seasonal work.
___ G. Travel required.
___ H. Unusual working hours.
___ I. Dusty or noisy conditions.

VII. Where can additional information about this occupation be obtained?

_____

_____

_____

INTERVIEW QUESTIONS

The following is a list of questions which could be used when interviewing people about their occupation. This list is not complete and is intended to be used as a "helper" in thinking up other questions.

1. Why did you pick this job?
2. How did you get started in your occupation?
3. How did you choose your place of training?
4. What educational, training, and other qualifications are there for the job?
5. If you should wish to change jobs, would the training contribute in any way?
6. Do you think this job would have a good future for me?
7. How could I get started in this career?
8. What is the salary range of this occupation?
9. What could a beginning person expect to make?
10. What are the fringe benefits?
11. Do you get paid vacations?
12. Do you have medical insurance?
13. Is there any chance of being laid-off? If so, how many times a year?
14. What sort of planning does this business have for retirement?
15. What do you or don't you like about your job?
16. What are the advantages?
17. What are the disadvantages?
18. What are the hours and working conditions?
19. Do you ever have to work holidays? If so, which ones?
20. Do you ever work on weekends?
21. Is there a special uniform you must wear, or are you free to wear what you want? Does the company provide the uniform or does the employee?
22. What tools do you need?
23. Do you have to buy your own equipment?
24. What are the physical requirements?
25. What do you do in this occupation?
26. How much traveling is involved?
27. What kinds of people do you work with?
28. Is there any chance for advancement?

29. What are your responsibilities?
30. Do you belong to a union?
31. What's a typical day like for you in this job?
32. Is there any on-the-job training?
33. Has there ever been a time when you couldn't stand your job? If so, why and when?
34. Do you have to move if the company does?
35. What work experience did you have before you started to work in this occupation?
36. Who depends on your work? Upon whom do you depend?
37. Are there opportunities for advancement in this job? If so, what are the requirements for advancement?
38. How does your job affect your personal life?
39. What kinds of people do you meet?
40. Do you work mainly with people or things?
41. Do you work a lot with ideas?
42. Does your job offer opportunities to be creative?
43. Are people with your kinds of skills usually needed - even when business may be bad?
44. Is your work at all seasonal?
45. Could you briefly describe the personal qualities a person would need to do your job - strength, height, agility, ability to think rapidly, ability to make decisions, ability to deal with other people, etc.?
46. Would you recommend this kind of work for your children?
47. How do you spend your time after work?
48. If you could have any job in the world, what would you like to be?
49. Do you still go to school for special training?
50. When are people promoted? When are people fired?

OBSERVATION/INTERVIEW FORM

NOTE TO STUDENT: These experiences are to be completed outside of class. You will need to select several people to observe and interview about different jobs. Don't use the same people or jobs that were used for the questionnaires. Check with the teacher before doing the observation/interviews. Make an appointment with the person to be observed and interviewed. Don't just walk into a place and try to complete the assignment. In setting up the appointment, explain that you are doing this as a careers class assignment. Tell the worker that you will need to observe him/her working for 1/2 hour, then interview him/her briefly to complete the form. Ask what would be this person's best time. Do it at his/her convenience. While observing the worker you are recording what you observe in Part I - Observing. . . . Then on to the interview portion of the assignment.

YOUR NAME _____ COMPANY _____

DATE _____ NAME OF EMPLOYEE _____

OCCUPATION _____

PART I: INFORMATION GATHERED DURING OBSERVATION

1. Job responsibilities:

2. Working conditions:

3. Personality traits needed for this occupation:

4. How worker is treated by customers (if applicable):

5. How worker is treated by coworkers:

6. How worker is treated by supervisor:

7. Advantages and/or disadvantages of occupation you have observed:

8. Describe your likes/dislikes of occupation observed:

PART II: INFORMATION GATHERED DURING INTERVIEW

NOTE TO STUDENT: After observing the worker for 1/2 hour, take a few minutes to talk with him/her about the questions on Part II - Interviewing. Record the worker's responses accurately. When you have finished with the interview, get the worker's signature and date. Thank him/her, and you are finished. (You'll also need to sign this form.) Be sure to schedule the Observation/Interview so that it's at a good time in the worker's day.

1. Job responsibilities you have:

2. Working conditions of your job:

3. Personality traits you find helpful in your job:

4. How you are treated by your customers:

5. How you are treated by your coworkers:

6. How you are treated by your supervisor:

7. Advantages and/or disadvantages you can see in your job:

8. What do you like/dislike about your job?

Employee's Signature DATE: _____

_____

Company: Student Signature:

_____ _____

LOOKING AT A CAREER

IN FARM MACHINERY

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out
more about this occupation?

LOOKING AT THE JOB OF AN AGRICULTURAL SUPPLIES SALES MANAGER

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

IS FORESTRY

AN OCCUPATION

FOR YOU?

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

LOOKING AT A CAREER

IN WILDLIFE CONSERVATION

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out
more about this occupation?

LOOKING AT OCCUPATIONS

IN LANDSCAPING

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

COULD YOU BE A FLORIST?

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

IS A JOB IN TURF MANAGEMENT

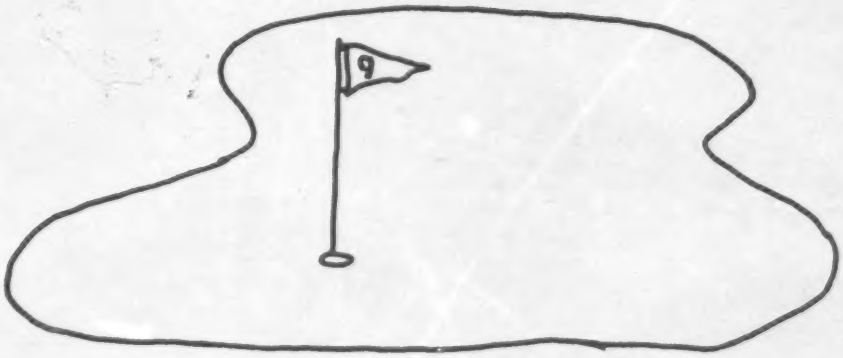
FOR YOU?

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?



LOOKING AT A CAREER

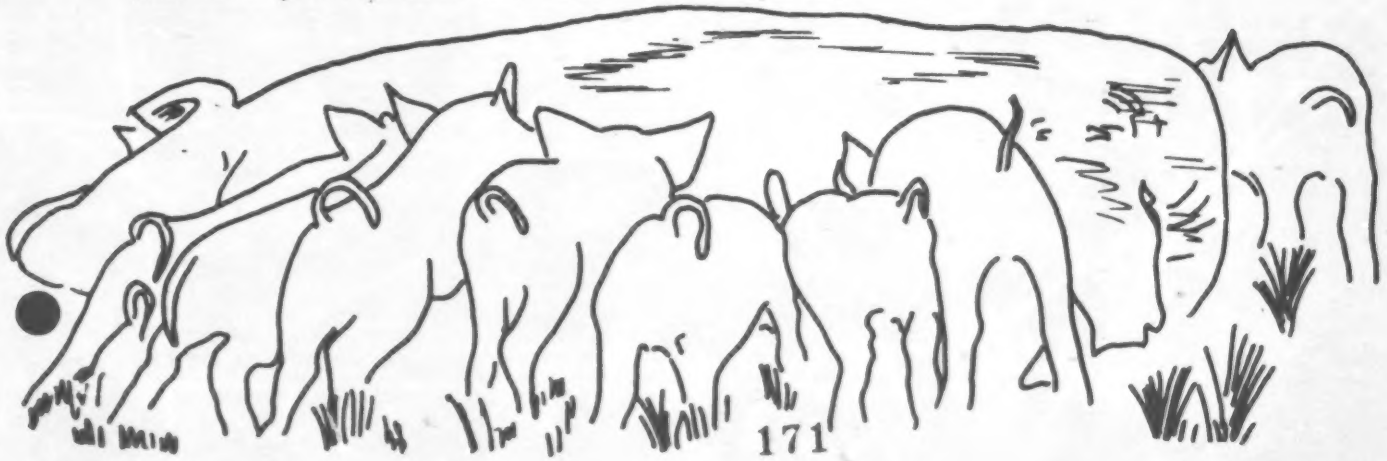
IN SWINE PRODUCTION

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?



COULD YOU BE

A VETERINARIAN?

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

IS A CAREER

IN SMALL ANIMAL CARE

FOR YOU?

How do you feel about small animal care as an occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

COULD YOU MANAGE

A PET SHOP?

How do you feel about this occupation?

What do you like about the job?

What don't you like about the job?

How would you find out more about this occupation?

APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS

REFERENCES

BOOKS

Career Education in the Environment.

Produced for the United States Office of Education, Division of Vocational and Technical Education, by Olympus Research Corporation, 818 18th Street NW, Washington, DC 20006.

Chickens and How to Raise Them.

Louis Darling. William Morrow and Co.: 105 Madison Ave., New York, NY 10016.

Essential Aspects of Career Planning and Development.

J.C. Atherton and Anthony Mumphrey. The Interstate Printers and Publishers: Danville, IL 61832.

Handbook of Agricultural Occupations.

Norman K. Hoover, D.Ed. The Interstate Printers and Publishers: Danville, IL 61832.

Industrial Fishing Technology.

Stansby. Van Nostrand, Reinhold Company: 450 West 33rd Street, New York, NY 10001.

Meat Hygiene

Brandly, Migaki and Taylor. Lea and Febiger: 600 South Washington Square, Philadelphia, PA 19106.

Occupational Outlook Handbook.

1974-75 Editions. U.S. Department of Labor, Bureau of Labor Statistics. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Ornamental Horticulture Source Units for Vocational Teachers.

Paul E. Hemp. The Interstate Printers and Publishers: Danville, IL 61832.

Poultry Products Technology.

Mountrey. A.V.I. Publishing Company: Box 670, Westport, CT 06880.

The Meat Handbook.

Levie. A.V.I. Publishing Company: Box 670, Westport, CT 06880.

The Meat We Eat.

Romans and Ziegler. Interstate Printers and Publishers: Danville, IL 61832.

SOURCES OF ADDITIONAL OCCUPATIONAL REFERENCES

Vocational Agriculture Service, University of Illinois, College of Agriculture, 434 Mumford Hall, Urbana, IL 61801.

Interstate Printers and Publishers, Inc., Danville, IL 61832.

Illinois Office of Education, Media and Resource Center, 100 North First Street, Springfield, IL 62777

PAMPHLET

Exploring Occupational Opportunities in the Retail Flower Shop Business.

Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, IL 61801.

FILMS AND FILMSTRIPS

Society for Visual Education, Inc., 1345 Diversey Parkway, Chicago, IL 60614: The Meat Cutter.

Eye Gate House, 146-01 Archer Avenue, Jamaica, NY 14435: Forestry Careers, Do You Like Flowers?, Careers in Veterinary Medicine.

Vocational Agriculture Service, 434 Mumford Hall, University of Illinois, Urbana, IL 61801: Agricultural Careers Kit (kit includes six filmstrips and tapes): 1. Your Opportunities in Agriculture; 2. The Famine Fighters (Products in Agriculture); 3. Think Big (Agricultural Mechanics); 4. Help, Opportunities in Supply and Service; 5. Focusing on Horticulture; 6. Are You a Mover (Agricultural Products). Also available: Choosing a Career in Ornamental Horticulture.

Centron Educational Films, 1621 West 9th Street, Lawrence, KS 66044: Foresters, 16 mm color film, 13 3/4 minutes; What Ecologists Do, 16 mm color film, 15 1/2 minutes.

Modern Talking Picture Service, 1687 Elmhurst Road, Elk Grove Village, IL 60007: The Covenant, 16 mm color film, 20 minutes.

Youth Opportunities in Agriculture, Agribusiness. Slide Set and Tape; available from local Farm Service representative, or purchase from Visual Educators, Inc., 1425 H Street, NW, Washington, DC 20005.

RESOURCES FOR APPLIED BIOLOGICAL AND AGRICULTURAL
OCCUPATIONS CAREER INFORMATION

Agricultural Stabilization
and Conservation Service
Washington, DC 20402

American Fisheries Society
Washington Building, Suite 1040
15th and New York Avenue, NW
Washington, DC 20005

American Phytopathological Society
1955 University Avenue
St. Paul, MN 55104

American Society of
Agricultural Engineers
1950 Niles Avenue
St. Joseph, MO 49085

Commonwealth Bureau of Animal
Breeding and Genetics
Bucks, England

Department of Conservation
State of Illinois
Springfield, IL 62706

Entomological Society of America
4603 Calvert Road
College Park, MD 20740

Farm Film Foundation
1425 H Street, NW
Washington, DC 20005

Food and Drug Administration
U.S. Dept. of Health, Education
and Welfare
Washington, DC 20005

Illinois Office of Education
100 North First Street
Springfield, IL 62777

National Lumber Manufacturers Assn.
National Forest Products Association
1519 Massachusetts Avenue, NW
Washington, DC 20036

National Plant Food Institute
1700 K Street, NW
Washington, DC 20006

National History Survey
University of Illinois
Urbana, IL 61801

Ohio State University
Dept. of Agricultural Education
Curriculum Materials Service
Room 201
2120 Fyffe Road
Columbus, OH 43210

Pacific Logging Congress
217 American Bank Building
Portland, OR 97205

Society of American Foresters
1010 16th Street, NW
Washington, DC 20036

Southern Assn. of Agriculture
Engineering and Vocational
Agriculture Teachers
Athens, GA 30601

Southern Illinois University Press
Lafferty Road
Carbondale, IL 61832

Interstate Printers and Publishers
Danville, IL 61832

University of Illinois
College of Agriculture
Urbana, IL 61801

University of Illinois
Visual Aids Service
1325 South Oak Street
Champaign, IL 61820

University of Oklahoma Press
University of Oklahoma
Norman, OK 73069

U.S. Government Printing Office
Washington, DC 20402

Vocational Agriculture Service
University of Illinois
College of Agriculture
434 Mumford Hall
Urbana, IL 61801

Vocational Education Productions
California State Polytechnic College
San Luis Obispo, CA 93401

John Wiley & Sons, Inc.
605 Third Avenue
New York, NY 10016

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